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HISTORIC AVIATION 2025

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HISTORIC AVIATION 2025

AEROPLANE

May 2025
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HISTORY IN THE AIR SINCE 1911

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What future for unique surviving Comet?

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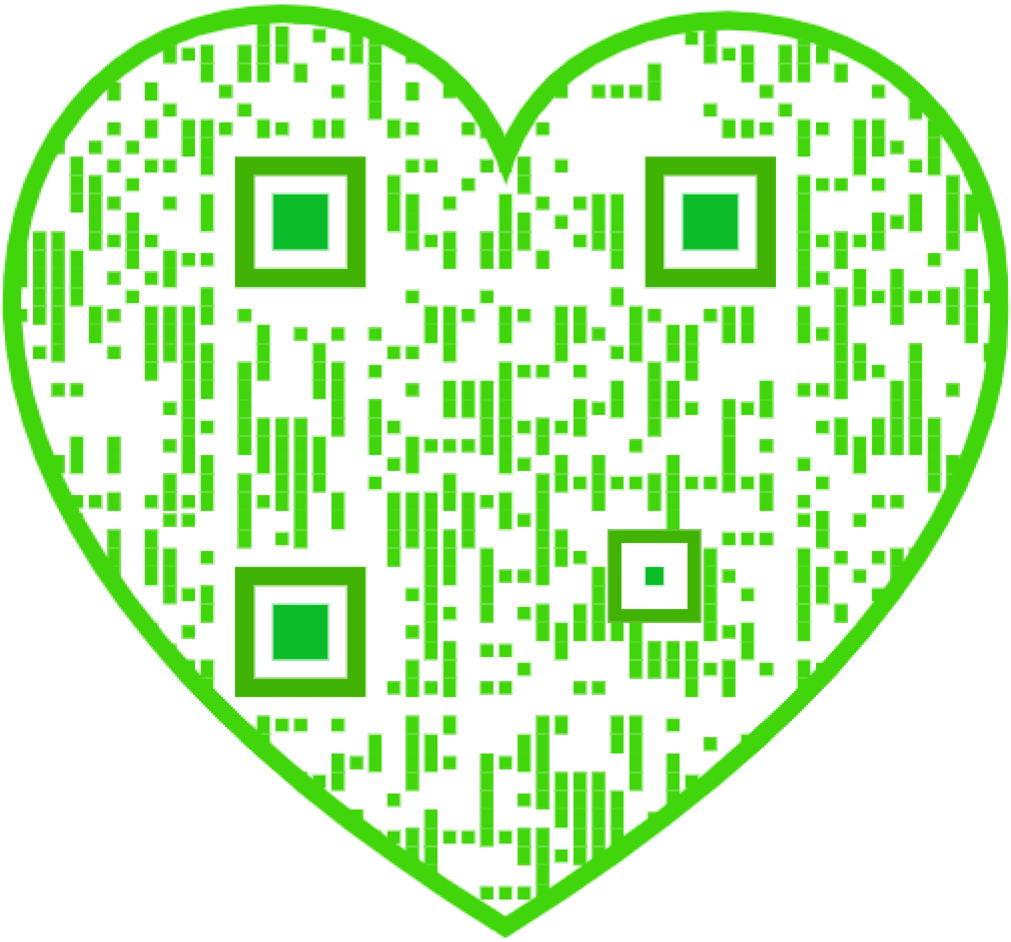

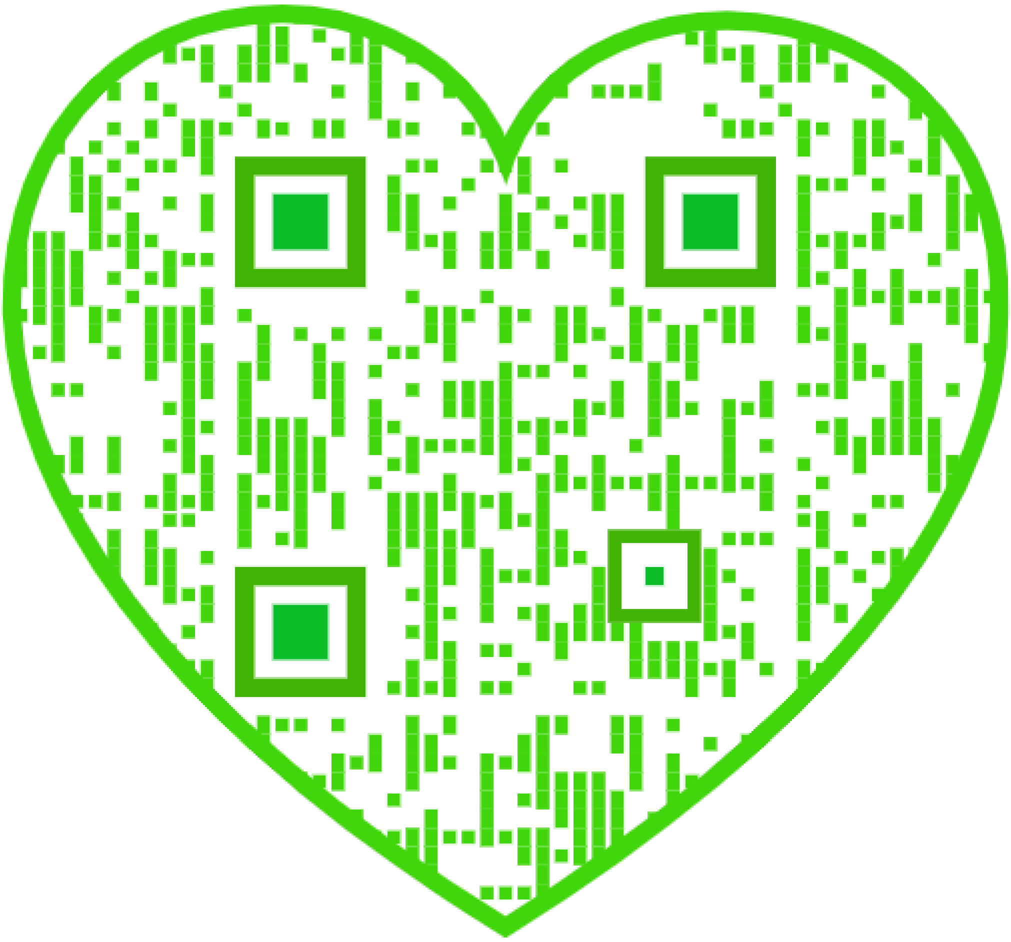

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May 2025

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DATABASE
SAAB 90 SCANDIA

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COVER IMAGE: The Battle of Britain Memorial Flight's Lancaster I, PA474. DARREN HARBAR

COVER IMAGE US: B-17 Preservation's B-17G Flying Fortress *Sally B*. ANDREW CRITCHELL

From the Editor

CONNECT WITH *AEROPLANE*...
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It was a coincidence that these two stories appeared within days of each other, but together they illustrate a problem for our aircraft preservation movement. The last complete short-fuselage de Havilland DH106 Comet has appeared, alongside numerous other airframes, on the RAF Museum's latest disposals list. At IWM Duxford, the actual Comet 4 which became the first jet airliner to fly the Atlantic has been removed from the AirSpace building as part of its current revamp, and will not go back inside. Aside from the RAFM aircraft at Cosford, just *one* example of the de Havilland jetliner is now preserved indoors anywhere in Britain, by the Science Museum at its Wroughton site, where there is no immediate prospect of its being on public view.

In both instances there are what one might call extenuating circumstances which provide a justification. One has no RAF history — though it did spend a long time on RAF-related trials work, notably on the Lightning and associated missile programmes — and the other isn't owned by the IWM, but by the independent Duxford Aviation Society, whose 50th anniversary we cover elsewhere in this issue. Who, however, could deny that they both deserve the best possible future in preservation?

> ***“Two very significant aeroplanes now face a less certain future”***

No serious debate on this subject can fail to take into account certain realities. It is true that the funding environment for national museums has long been, to use the sort of corporate euphemism I generally abhor, 'challenging,' this largely as a result of political decisions. As much as it may be unpopular with some, museums do need to change, to reflect society, to adapt to shifting attitudes and evolving audience expectations. And it can never be stated often enough that unlimited space for exhibits is a pipedream, not a reality.

But, even with all this in mind, it should be a cause for concern that these two *very* significant aeroplanes now face a less certain future than would otherwise be the case.

Why do I say that? Well, if the RAFM Comet is to go elsewhere, one wonders which other institutions that might be tempted by the aircraft have enough space under cover to house it. And the Duxford Aviation Society's splendid efforts over five decades — which are now being redoubled with a fundraising campaign — cannot obscure the fact that keeping its Comet in such immaculate condition will now be that much harder with the airframe outside in the elements. Large exhibits such as these place a very considerable burden on the independent museum sector, which, despite the great talents and huge enthusiasm at its disposal, is far less well-resourced and often lacking suitable accommodation.

Above all, with the two Comets, given how neither example has an RAF history — notwithstanding the Cosford aircraft's trials background — it again raises the issue of how Britain's civil aviation heritage is in serious need of official support. This was true in 2006, when the aircraft in the British Airways Collection at Cosford were either scrapped or cast to the four winds as a result of the airline withdrawing its funding. Nearly two decades after that enormous wake-up call, it is still true today. Is this situation ever destined to alter? I fear I know the answer.

Should you be wondering where our regular '*Aeroplane* meets...' feature is, it's taking a break this month due to the breadth of coverage inside our Historic Aviation 2025 special. However, it'll be back in the June issue.

Ben Dunnell

CONTRIBUTORS THIS MONTH

ANDREW ARTHY

Andrew lives in the small coastal town of Penguin in north-western Tasmania, and received a PhD in military history during 2008. He founded the Air War Publications company with Morten Jessen in 2010 and has researched many aspects of Second World War aviation, with a particular interest in the air war over the Eastern Front. When writing a story, he likes to combine archival sources with first-hand accounts from those who were there, as can be seen in his 'Pick Up Artists' article in this issue.

JAMIE EWAN

The associate editor of our sister title *FlyPast*, Jamie lives and breathes the ever-evolving world of historic aviation. A private pilot, if he isn't exploring the skies he can be found getting his hands dirty on myriad types. He joins us this month writing about a subject incredibly close to his heart, the Thomas Castle Aviation Heritage Trust, and how it is working to inspire the next generation of vintage aviators with the indomitable Tiger Moth.

JAN FORSGREN

Most likely the least-known of all Saab aeroplanes, the Saab 90 Scandia short-to-medium-range airliner was an attempt at producing a successor to the DC-3. Although it aroused much interest and proved very popular both with crews and passengers, only 18 were built between 1946 and 1955 for airlines in Scandinavia and Brazil. Jan describes its history in this month's Database — the aircraft's qualities may surprise.

DAN ZAMANSKY

Dan sees issues about which we should only read in history books, including military aggression and appeasement, appear ever more often in the daily paper. This drives his desire to make the past known and understood so some of us, at least, might learn history's lessons. Even as the anniversary of VE-Day draws near, some of the lessons of the Second World War are not quite as obvious as one might think. Dan writes about these and other subjects on Substack, at newworldcrisis.substack.com.

AEROPLANE
ESTABLISHED 1911

Aeroplane traces its lineage back to the weekly *The Aeroplane*, founded by C. G. Grey in 1911 and published until 1968. It was relaunched as a monthly in 1973 by Richard T. Riding, editor for 25 years until 1998.

THE AEROPLANE
TRIPLEX Safety GLASS

Please help preserve the future of the RAF Coltishall Heritage Centre

Photo credit: Rene Vink

For 66 years, RAF Coltishall, nestled in the picturesque Broads region of East Anglia, was the only RAF station to operate fighter aircraft throughout its operational life. Immerse yourself in the rich history of this iconic Battle of Britain station where the skies roared with thunderous sounds of the Spitfire to the Jaguar.
Today, the RAF Coltishall Heritage Centre stands as a testament to those who served and is a captivating destination for aviation enthusiasts, history buffs and the general public alike.

History Unfolded
Originally planned as a bomber station, RAF Coltishall's roots date back to 1940 when it became a fighter station at the beginning of World War II. Throughout its illustrious history, the base played a pivotal role in defending the skies and contributed significantly to the nation's aerial prowess.

Aviation Marvels
Step into the world of aviation excellence as you discover the stories of the impressive array of aircraft that graced the skies above RAF Coltishall. From the iconic Spitfires and Hurricanes to the Lightnings and Jaguars of the Jet Era. These aircraft reflect a unique story of innovation and heroism in defence of the Realm.

Museum and Exhibits
Delve into the fascinating exhibits housed within the RAF Coltishall Heritage Centre. Explore artifacts, photographs, and interactive displays that chronicle the station's history and the brave men and women who served here. Gain insights into the evolution of aviation technology and the pivotal role Coltishall played during various conflicts.

To help preserve the future of the Heritage Centre, please consider supporting the RAF Station Coltishall Heritage Trust by becoming a Friend or leaving the Charity a gift in your Will

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News

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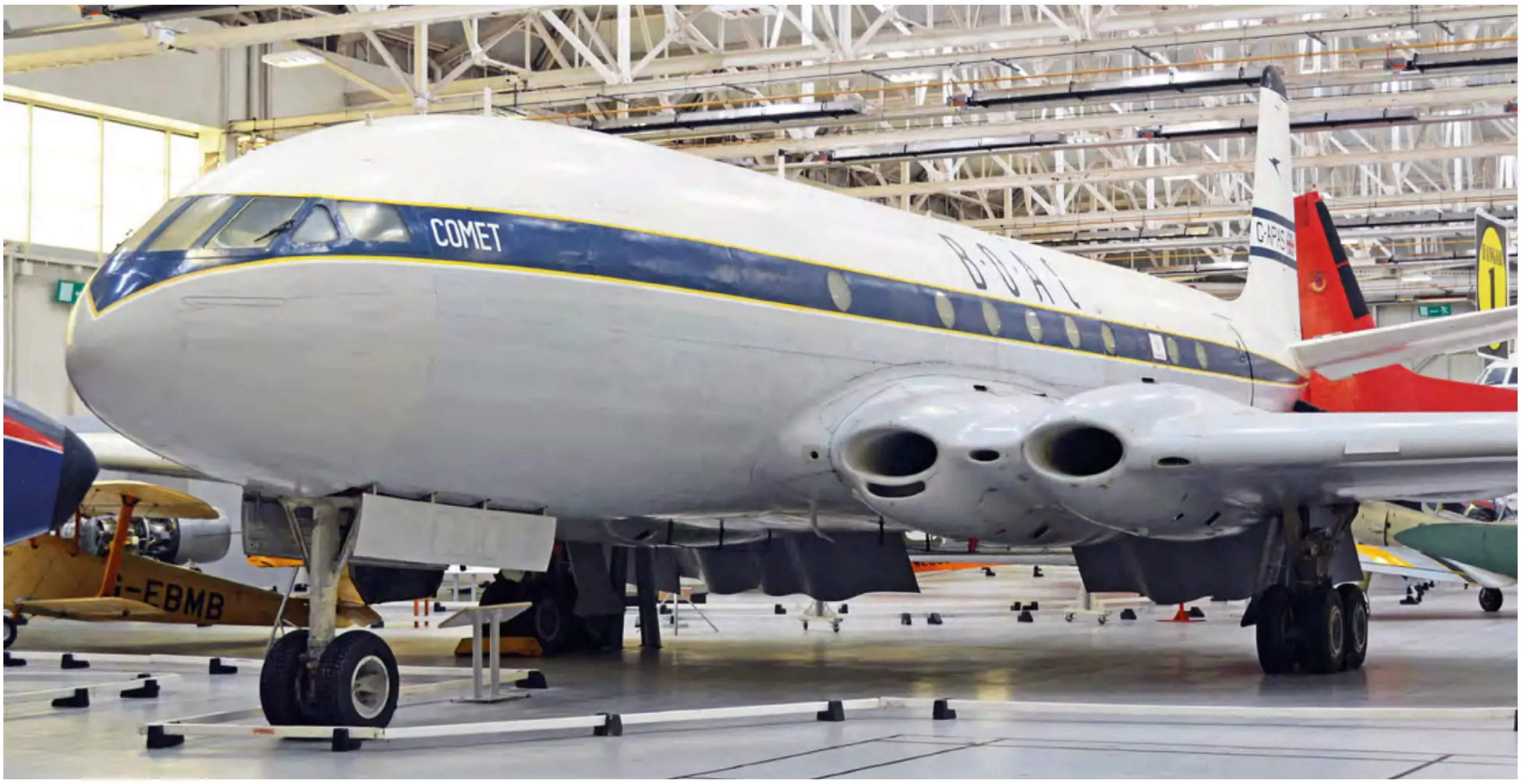
RAFM seeks more disposals



While the RAF Museum's Comet 1XB G-APAS is exhibited in a BOAC livery it never carried, this sole surviving short-fuselage example of the type served as XM823 on Lightning development work, among other military trials. ALAN WILSON

During early March the Royal Air Force Museum released its latest list of airframe disposals, which includes several significant machines currently displayed at the RAF Museum Midlands at Cosford. These include the only example of the Fieseler Fi 156 Storch to be on show at a UK museum, Fairchild Argus III 'FS628'/G-AIZE, restored by the Medway Aircraft Preservation Society at Rochester Airport over a two-year period before being delivered to Cosford in June 1999, Vickers Varsity T1 WL679, de Havilland Devon VP952 — which during 1949 served as the personal aircraft of AOC Transport Command — and de Havilland Comet 1XB XM823/G-APAS, the only surviving short-fuselage example of the world's first jet airliner.

Responding to questions posed by *Aeroplane* on the disposal of such important aircraft that have long been exhibited under cover at Cosford, a spokesperson from the RAFM collections development committee replied, "The RAF Museum periodically reviews the collection we hold on behalf of the nation. The collection review process ensures the collection is developed in line with our collecting strategy and our wider strategic plans to ensure we inspire everyone with the RAF's story. The terms of the collections review are outlined in our collections review policy and supported by the principles set out in our acquisition and disposals policy.

"The latest collections review of aircraft was carried out in conjunction with a major and long-running future display planning exercise. The review and planning exercise considered all aircraft in the museum's collection, across all RAF Museum sites, over the next 15-plus years.

"Following an in-depth analysis, and an assessment of future display options, 12 airframes have been advertised for free transfer to other organisations. In each instance

Varsity WL679 is the only specimen of the twin-engined crew trainer in a national museum. KEY/BEN DUNNELL

the airframe's wider story is meaningfully represented elsewhere within the museum's collection.

"Transferring these airframes will enable us to acquire aircraft types to share the RAF's more recent history and support the wider heritage sector by offering the opportunity for public access to many airframes which would otherwise be held either in long-term storage or externally where their condition would deteriorate.

"The transfer process will follow the museum's collection development policy and the Museums Association's disposal toolkit, and the museum's priorities in assessing received expressions of interest will be the retention of the objects within the public domain.

"The selection criteria used to determine which aircraft would be proposed as transfer candidates included factors such as whether or not the aircraft had a display plan for the next 15-plus years, whether or not the type and variant are relevant to the RAF, whether or not the airframe has a specific RAF history, whether or not the airframe represents a duplication, and the extent to which the aircraft and its story can be represented by other items in the museum's collection.

"The Vickers Varsity in particular scored lowly on account of its lack of a specific RAF operational history, having been with the Royal Aircraft Establishment and the Radar Research Establishment as part of the MoD Procurement Executive Aircraft Fleet, as opposed to any use with the RAF in the training role. Added to this, the museum retains other post-war/Cold War trainer aircraft which do have a specific RAF history. These factors, coupled with the lack of an available display plan for the Varsity over the next 15 years, precluded its retention as a representative of the type in RAF service."

Not for many years has the ex-South African Air Force Ventura been displayed by the RAFM. This may not be the most glamorous aeroplane in RAF history, but the type's Bomber Command exploits deserve still to be recalled. An opportunity for an independent museum? GORDON RENCHARD

While the argument that WL679 hadn't specifically served in the type's designed role as an aircrew trainer — having been delivered to the Radio Flight at RAE Farnborough in January 1954 and retired by the Defence Research Agency Missile Technology and Counter-Measures Department at Farnborough in August 1991 — is technically correct, the machine represents the 160-odd examples used by the RAF from 1951-76. The RAF Museum's own website says of the type, "The most outstanding quality of the Varsity was that it could provide excellent training for pilots, flight engineers, radio operators, navigators and bomb aimers simultaneously."

As a multi-engined pilot trainer the Varsity was replaced by the Scottish Aviation Jetstream T1, 26 of which were initially ordered by the RAF, the type being retired in 2004. Presumably the smaller dimensions of the Jetstream — which is 47ft 1in long, with a wingspan of 52ft, compared with the Varsity's wingspan of 95ft 7in and length of 67ft 6in — may have had a bearing on the museum choosing the far less distinguished Jetstream for inclusion in Cosford's planned rearrangement of Hangar One.

Regarding rumours that Armstrong Whitworth Argosy C1 XP411 and Hawker Siddeley Andover E3A XS639 — the only one of the 31 examples of the type to survive in the UK — will be leaving Hangar One, the museum says, "With regards to the Andover and Argosy, we are currently exploring options for accommodating these on site at the Midlands [museum]. Our preferred option is to accommodate as much of the Argosy as possible within the National Cold War Exhibition, although this is subject to various factors and yet to be confirmed. We will share details in due course". *Aeroplane* understands the Argosy may well be displayed sans wings and tail in the Cold War building, and that the Andover will go on display outside in the place currently occupied by the former Royal Netherlands Navy Lockheed SP-2H Neptune, serial 204, which is to leave Cosford in the near future.

The RAFM's reply to *Aeroplane* continues, "The museum remains committed to telling the story of the RAF across all roles, including transport and training, and both areas will be represented with new acquisitions as part of the museum's Midlands Development Programme, which will include an innovative and nationally relevant exhibition which will focus on the critical role of the Royal Air Force since 1980. We will share details of these new acquisitions, and other aircraft moves, in due course."

The remaining aircraft on the disposals list are Vickers Valetta C2 VX573, FMA IA-58 Pucara A-515, which was captured at the end of the Falklands conflict, Lockheed Ventura II AJ469, Hunting Percival Jet Provost T1 XD674, Boulton Paul Sea Balliol T21 WL732, Fairey Swordfish IV HS503 and de Havilland Chipmunk T10 WP962. The Chipmunk is one of two that made a pair of long-distance flights, Operation 'Northern Circle' during July-August 1996 and Exercise 'Northern Venture' in the late spring/early summer of 1997, the latter a 64-day, 16,259-mile flight. The RAF Museum's website records the mission thus: "This was the first non-Russian air force [aircraft] to fly across Russia from coast to coast, successfully charting an air route for general navigation from Europe to North America across Russia, and allowing its comparison with the existing route across the North Atlantic, Greenland and Canada. They were also the first Western light aircraft to fly in Russia east of the Ural Mountains". Plainly an enterprise that belongs to a previous age, as does the RAF Museum's original commitment to displaying a truly representative range of ex-RAF aircraft, including the all-important trainers and transports.

Duxford airliners out in the cold

At Duxford on 12 March, the British Airliner Collection's de Havillland Comet 4 G-APDB — the actual machine that, on 4 October 1958, completed the first scheduled jet service across the Atlantic from New York Idlewild to London Heathrow — was towed out of the IWM's AirSpace hangar, where it has been displayed in its original BOAC markings since 2006. It is now on permanent external display at the Cambridgeshire airfield.

The Comet was soon followed by DH Dove 6 G-ALFU, which had been on display suspended from the ceiling of AirSpace. This £25-million development of Duxford's Superhangar — which originally opened in June 1986 — is now due to be repurposed as a Cold War building, displaying military vehicles in addition to aeroplanes, having been dedicated for the past 18 years to British and Commonwealth aircraft types. Avro York MW232/G-ANTK, a genuine Berlin Airlift veteran and surely worth retention in a building with a Cold War theme, is due to move out soon, this transport development of the Lancaster surely being the most vulnerable of the three evictees to the UK climate.

Following a change of priorities by the IWM, the Duxford Aviation Society British Airliner Collection's Comet 4, G-APDB, one of Britain's truly historic airframes, faces the future unprotected from the elements. DAVE SWANN

The former Civil Aviation Flying Unit Dove 6, G-ALFU, shortly after eviction from AirSpace. MARK WEBSTER

Battle of Britain Spitfire arrives in Germany

On 21 March Supermarine Spitfire IX MH415/OO-IXB was flown from Brasschaat, Belgium by Frédéric Vormezeele of FAST Aero to Siegerland Airport in south-western Germany from where it will now be operated by its new owner, Georg Raab's Flying Legends collection. Raab himself flew his Chance Vought F4U-5NL Corsair D-FCOR to meet the new acquisition and escort the Spitfire to its latest base in suitable style.

MH415 played a role in the *Battle of Britain* movie in 1968, after which, like many of the Hispano Buchóns used during filming, it was stored by Wilson 'Connie' Edwards on his ranch in Big Spring, Texas. Following Edwards' death in May 2019, the Spitfire was sold on, being freighted to the UK in April 2021, re-registered as G-AVDJ and restored to flying condition by Air Leasing at Sywell. During 2024, it was put up for sale again and acquired by Georg Raab.

Spitfire IX MH415/OO-IXB arrives at Siegerland Airport on 21 March, escorted in by Georg Raab flying Corsair D-FCOR. STEFAN SCHMOLL

LAST OF 'THE FEW' DIES AT 105

The final surviving Battle of Britain pilot, Gp Capt John 'Paddy' Hemingway DFC AE, died at the age of 105 on 17 March in a nursing home near Dublin, the city in which he had been born on 17 July 1919.

Hemingway joined the RAF on a short-service commission on 7 March 1938, and received flying instruction with No 5 Elementary and Reserve Flying Training School at Brough, east Yorkshire on the Blackburn B-2. His initial operational unit was No 85 Squadron, Hemingway shooting down his first enemy aircraft, a Heinkel He 111 during the Battle of France on 10 May 1940 while flying a Hawker Hurricane I. He destroyed a Dornier Do 17 the very next day, but his Hurricane then suffered damage and he made a forced landing near Maastricht.

On 18 August another Hurricane was damaged while being flown by Hemingway during a dogfight over the Thames Estuary and he had to bail out, only to be shot down for a second time over Eastchurch on 26 August. Immediately back in the saddle with No 85 Squadron, now commanded by Sqn Ldr Peter Townsend, on 31 August Hemingway damaged a Messerschmitt Bf 109 E.

Gp Capt John 'Paddy' Hemingway DFC AE with a famous portrait of himself taken during the summer of 1940. VIA DAVE BROCKLEHURST

Encountering bad weather on 22 September, he made a forced landing close to RAF Church Fenton in a different Hurricane.

A further bail-out came on 13 May 1941. By now No 85 Squadron had converted to the night fighter role with Douglas Havocs, and when his aeroplane suffered instrument failure in bad weather Hemingway was forced to take to the silk at about 600ft, breaking two fingers when his right hand hit the tail. His parachute failed to fully deploy and Hemingway landed in a tree, suffering injuries to his ankles, following which he was awarded a DFC. On 7 July 1941 was posted to West Malling to join No 1452 (Fighter) Flight operating Turbinlite Havocs.

Promoted to acting squadron leader on New Year's Day 1944, Hemingway served as an air traffic controller during the period of the Normandy invasion, but returned to operational flying duties in April 1945 commanding No 43 Squadron on the Spitfire IX in the Mediterranean. During a ground attack sortie near Ravenna during April 1945, Hemingway's Spitfire took several anti-aircraft hits, causing him to bail out for the fourth time, landing in enemy territory and helped to return to his unit by Italian partisans.

Post-war Hemingway stayed in the RAF, becoming a wing commander on 1 July 1954 and serving as station commander at Leconfield. He worked as a staff officer with NATO and at the Air Ministry in London, being promoted to group captain on 1 January 1969 and taking retirement nine months later.

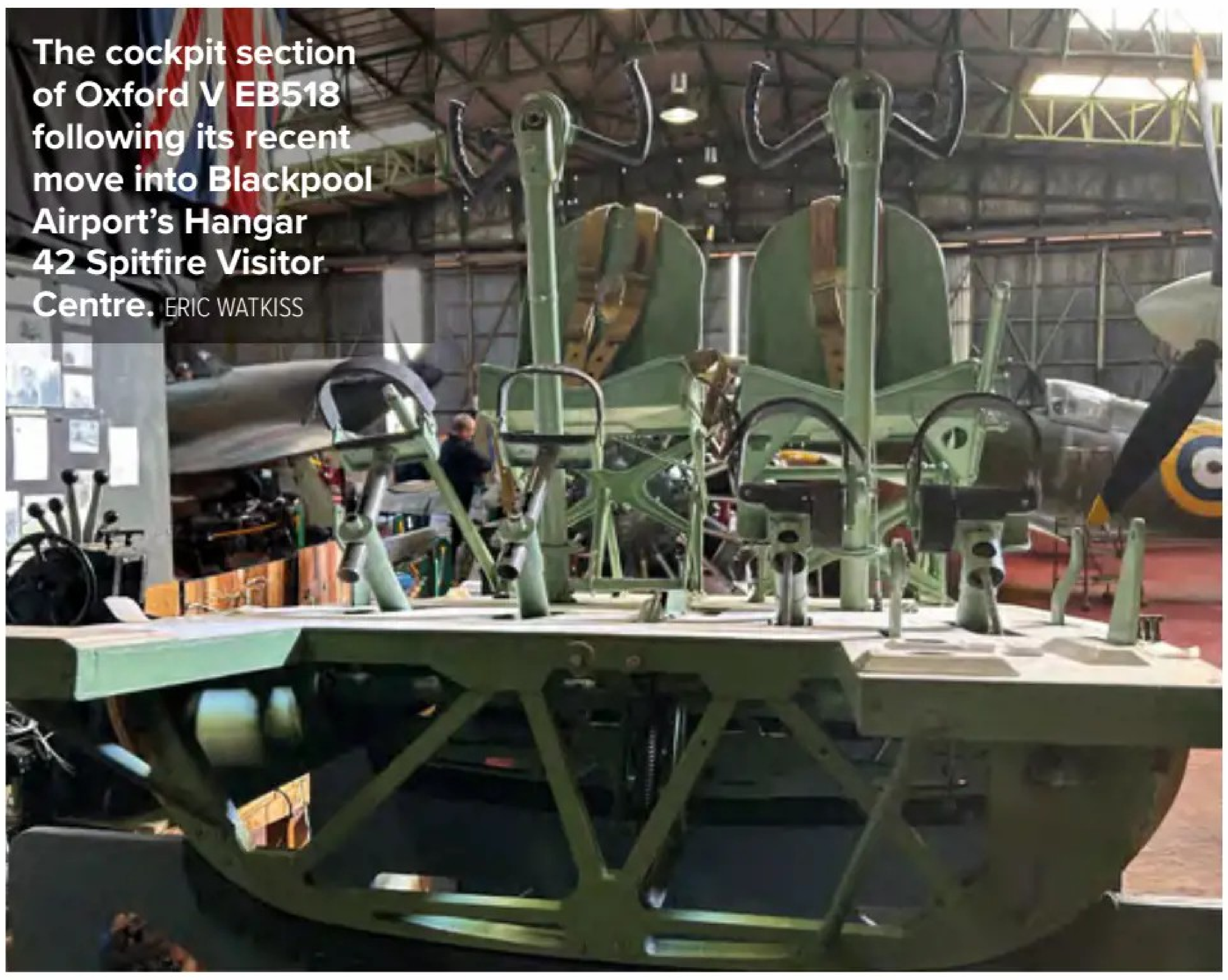
The current Chief of the Air Staff, ACM Sir Rich Knighton said of John Hemingway, "Paddy was an amazing character whose life story embodies all that was and remains great about the Royal Air Force. This was a generation who understood the importance of service and comradeship. A generation who believed that with hard work, clarity of purpose and a determination to succeed, they would not lose. Their efforts and the efforts of all our personnel past and present are the bedrock on which the Royal Air Force maintains the security of the UK at home and abroad. Their sense of duty and willingness to put others before themselves should inspire those who will build the next-generation Royal Air Force."

Speedy progress on Saving Amy Oxford

At Blackpool Airport, the cockpit section of the Saving Amy project's Airspeed Oxford V, EB518, is ready for final assembly and has moved from its workshop into the airport's Hangar 42 Spitfire Visitor Centre while preparations are made for building of a second hangar next to the museum to house the aeroplane. The cockpit's electrical system is fully functional and ready for installation. Two Pratt & Whitney Wasp Junior engines, donated by the Pima Air and Space Museum in Arizona, have been restored to non-running status and are fitted to the engine mounts.

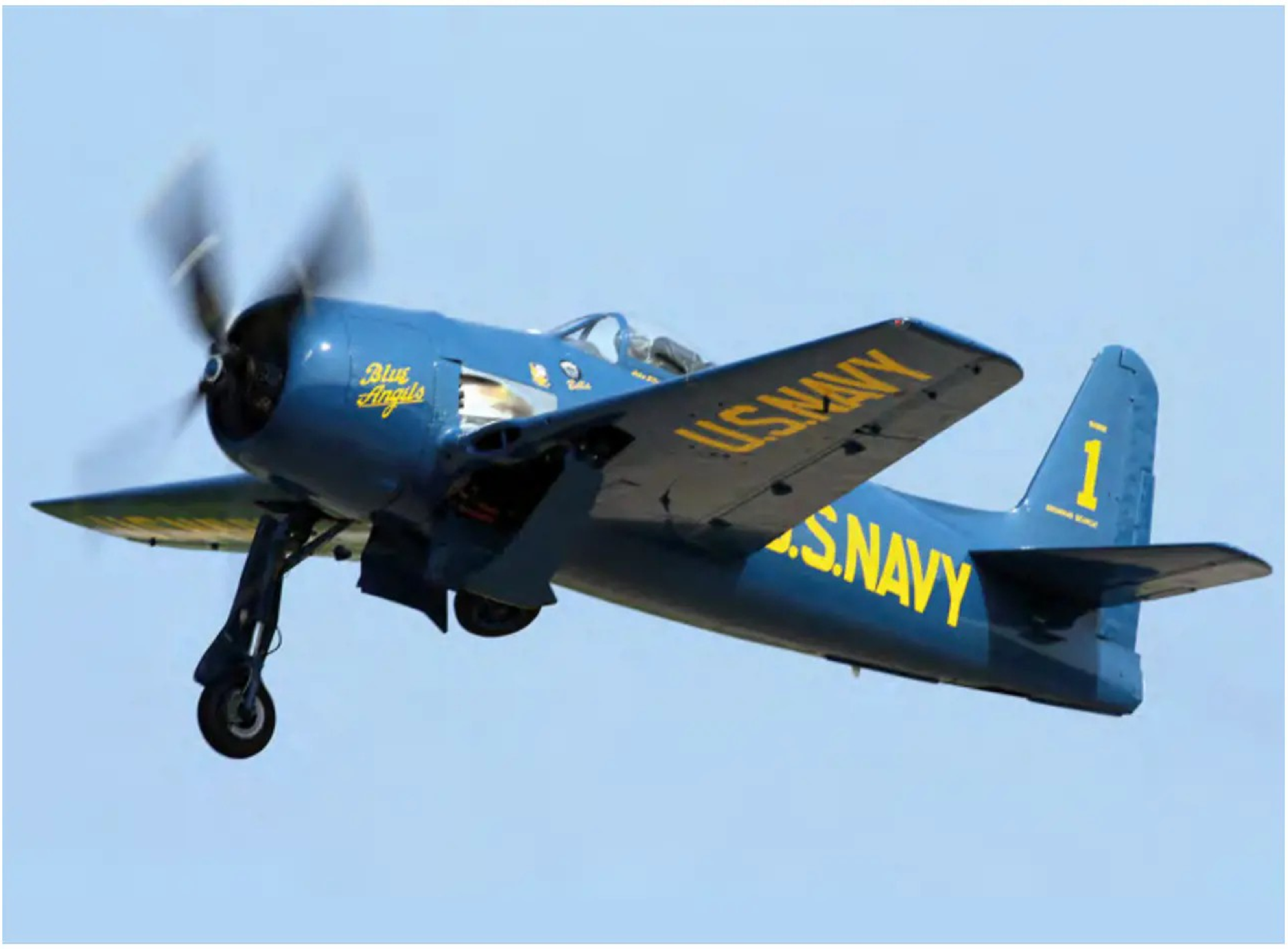
Eric Watkiss from Saving Amy says, "The next stage is to rebuild the central wing carry-through section. We have the original but all the spruce needs replacing. Fortunately, we have had 150 lengths of Sitka spruce kindly donated to us by Heritage Tree Services of Henley-on-Thames."

The project is named after Amy Johnson, who took off from Blackpool's Squires Gate airfield on 5 January 1941 in an Oxford heading to Kidlington in Oxfordshire. Four-and-a-half hours after departure the aircraft ditched into the Thames Estuary, with the loss of Britain's greatest female aviator.



The cockpit section of Oxford V EB518 following its recent move into Blackpool Airport's Hangar 42 Spitfire Visitor Centre. ERIC WATKISS

Bearcat for the Flying Bulls



F8F-2 Bearcat BuNo 121776/N68RW, here taking off from Oshkosh, Wisconsin during July 2022 has been acquired by the Salzburg-based Flying Bulls. NIGEL HITCHMAN

Grumman F8F-2 Bearcat BuNo 121776/N68RW was added to the Salzburg Airport-based Flying Bulls collection during March. Previously owned by John O'Connor and based at Wilmington, Delaware, the former US Navy interceptor wears the markings of the Blue Angels aerobatic team, which operated the type from 1946-50.

Originally built in 1947 for the US Navy, during 1959 it was acquired by the Kaman Aircraft Corporation for use as a powerful wind machine at Bloomfield, Connecticut. Retired in 1970, it went into storage at the US Marine Corps Museum at Quantico, Virginia until 1996, when it moved to Galveston, Texas. Restoration to fly then got under way with Air SRV/Lone Star Flight Museum. Registered N86RW, the Bearcat took to the air again during April 2003, being repainted into Blue Angels markings and given the false US Navy serial 94996 two years later. It was flown, named *Bella*, in the 2011 National Championship Air Races at Reno, Nevada by the late Nelson Ezell but failed to qualify for the Unlimited final.

NEWS IN BRIEF

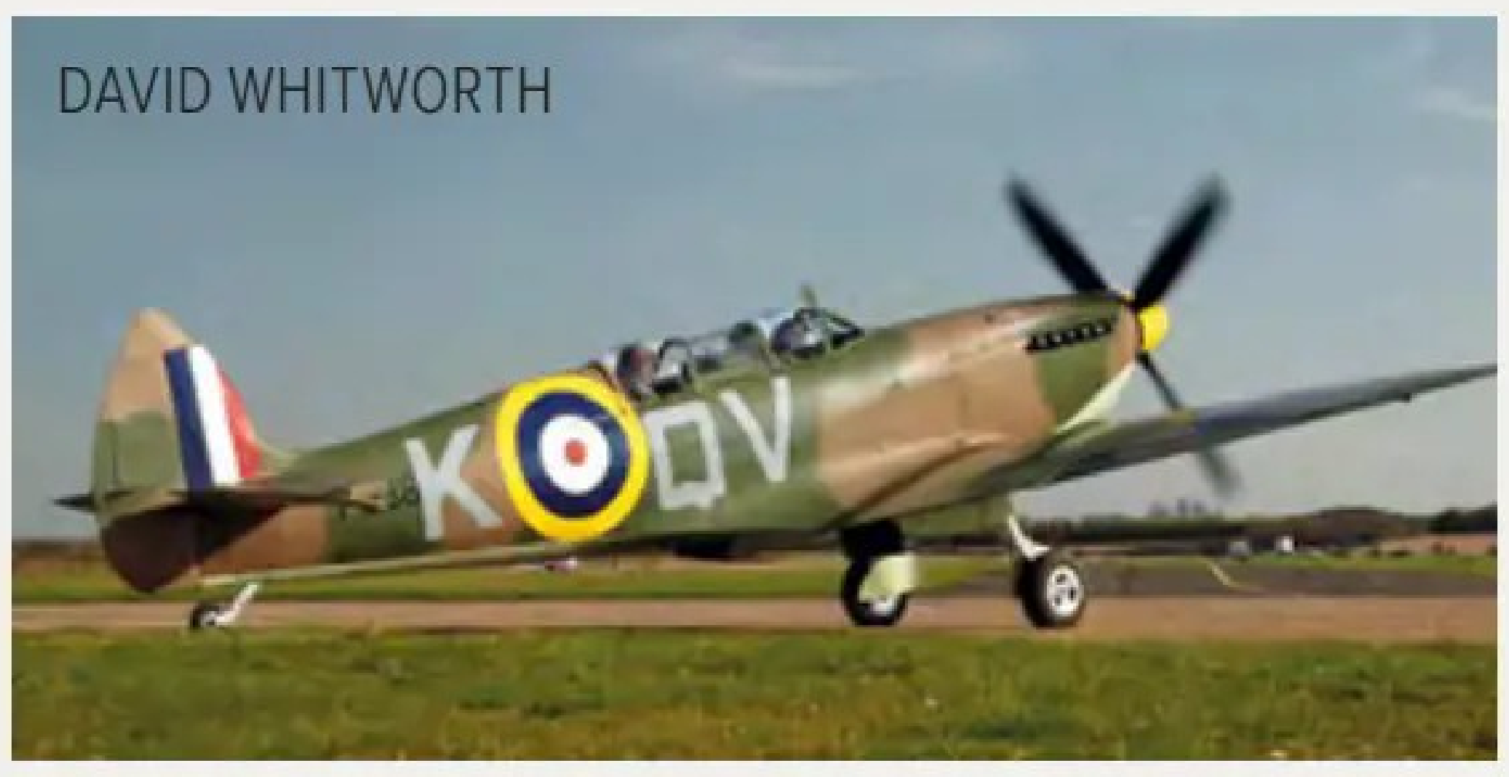
AERO LEGENDS TO OPERATE FROM OLD WARDEN

On 13 March the Shuttleworth Collection announced that Aero Legends will begin two-seat Spitfire and Harvard flight experience operations from Old Warden during May. Jean-Michel Munn, head of engineering at Shuttleworth, said, "This development in our relationship is a great move toward strengthening bonds in the aviation community. Long may it continue."

MORAYVIA

TORNADO TO MORAYVIA

Panavia Tornado XZ630 was acquired in early March by the Morayvia museum at the former RAF Kinloss, adding to its range of aircraft operated by the RAF in Scotland. The first British pre-production strike Tornado, it had been displayed on RAF Halton's parade square since 2004. BEN DUNNELL



DAVID WHITWORTH

BATTLE OF BRITAIN COLOURS FOR TWO-SEAT 'SPIT'

Spitfire IXT PT462, operated by the Duxford-based Aircraft Restoration Company and its associated flight experiences arm Aerial Collective, has been repainted for this Battle of Britain 85th anniversary season. It now wears the colours of No 19 Squadron Spitfire I P9386/QV-K, flown in 1940 by Sqn Ldr Brian Lane from Duxford and its satellite station Fowlmere. BD

THIRD IRISH MAGISTER JOINS SHANNON MUSEUM

At the Shannon Aviation Museum in Smithstown, County Clare, former Irish Air Corps Fouga CM-170 Magister serial 219 was placed onto its display plinth in early March. The trainer is one of three IAC CM-170s that will be on show there during the summer. In July 2022, serial 216 was installed in the main museum building and 220 will be reunited with its fellow former Silver Swallows aerobatic team aircraft during June. Look out for a two-part feature on the Irish Magisters in future issues of *Aeroplane*.

The new extension to the museum is due to be completed in June. It will see all the IAC collection aircraft, including SIAI-Marchetti SF-260 Warrior 231 and Reims-Cessna FR172H 210 on display and open to the public in August.

Former Irish Air Corps Magister serial 219 being placed onto its yet-to-be-completed display plinth at the Shannon Aviation Museum in early March. SHANNON AVIATION MUSEUM

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MERLIN FIGHTERS FLY AGAIN AT BBMF

At RAF Coningsby on 14 March, Supermarine Spitfire XVI TE311 became the first Rolls-Royce Merlin-powered fighter of the Battle of Britain Memorial Flight to fly since the tragic post-take-off accident suffered by Spitfire IXe MK356 in a field near Coningsby which claimed the life of Sqn Ldr Mark Long on 25 May 2024. At the controls was BBMF CO Sqn Ldr Mark Sugden, who four days later took Hurricane IIc LF363 into the air for the first time in nearly 10 months.

A spokesperson from the Ministry of Defence said, "Whilst the investigation into the fatal accident involving MK356 on 25 May 2024 continues, all available evidence has been considered in making the decision to return to flying. This will see all BBMF aircraft types flying again this year, the 85th anniversary of the Battle of Britain and [the] 80th anniversaries of VE and VJ-Day."

Battle of Britain Memorial Flight CO Sqn Ldr Mark Sugden flying Spitfire XVI TE311 over Coningsby on 14 March. BBMF

AEROPLANE VAMPIRE COMPLETED

Five-and-a-half years after restoration began in an old wireless telegraphy station building at Kesgrave near Ipswich, the Suffolk Aviation Heritage Group completed its de Havilland Vampire T11, XD506, at the beginning of March. Taken into service by the RAF on 6 April 1954, XD506 led a formation of four Vampires for a photo sortie put up specially for a January 1956 feature in *The Aeroplane* magazine.

In September 1968 it was displayed at the RAF Finningley Battle of Britain 'At Home' Day, becoming a gate guard at RAF Swinderby, Lincolnshire during 1977. Following many years of decay, XD506 went to the Jet Age Museum at Staverton Airport, Gloucestershire in February 1998, finally moving to covered accommodation at Kesgrave in the autumn of 2017. It has now regained the markings it wore when used for *The Aeroplane*'s photo sortie 70 years ago.

ABOVE: Newly restored Vampire T11 XD506 in the old World War Two-vintage wireless telegraphy station building at Foxhall Road, Kesgrave in late March. ALAN DEWHURST

RIGHT: XD506 leading a formation loop in December 1955 for a feature in *The Aeroplane*, our weekly predecessor publication, the following month. At this point the Vampire was in service with No 5 Flying Training School at Oakington near Cambridge. *AEROPLANE*

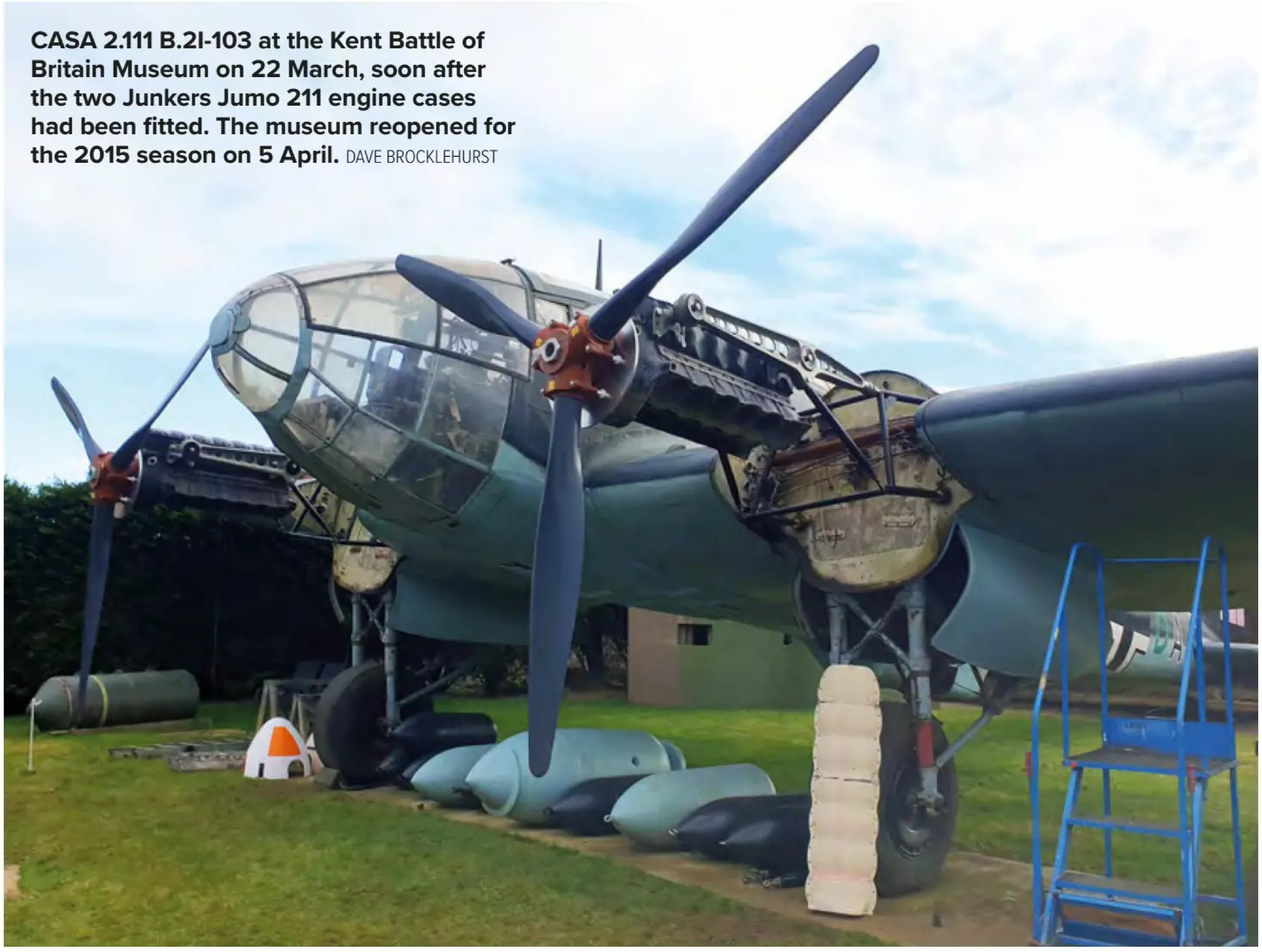
HAWKINGE ’EINKEL GETS JUMOS

At the Kent Battle of Britain Museum at Hawkinge near Folkestone during the weekend of 21-22 March, a pair of Junkers Jumo 211 engine cases were fitted to the museum’s CASA 2.111B (Heinkel He 111 H-16), B.2I-103. The powerplants were bought from the Wings Museum near Balcombe, Sussex in June 2020, with various other engine parts having been sourced from across the world since the museum acquired the airframe from the Imperial War Museums during 2019.

Museum chairman Dave Brocklehurst MBE says, “The propeller blades and hubs are 3D-printed out of UV-protected plastic and we will use these until we can source original items. The front engine-bearers were acquired from Germany and the USA.

“We located a set of rear mounts in Russia, just a few weeks before they invaded Ukraine, and we are not allowed to purchase anything from Russia at present. We thankfully sourced a thumbnail section of the rear mount from an engineer’s report on the first Heinkel He 111 to be shot down over Great Britain in 1939 and acquired this from Craig Charleston. It provided enough information for Pete Smith — chief engineer and trustee of the Westland Whirlwind Fighter Project — for him to fabricate using a lot of the rear mounts from the time our aeroplane was fitted with Rolls-Royce Merlins.

“We have not been able to locate any viable engine cowlings in the past six years so we are currently looking at producing these in-house with Pete Smith. We trial-fitted the cowling rails on 22 March for this element of the project.”



CASA 2.111 B.2I-103 at the Kent Battle of Britain Museum on 22 March, soon after the two Junkers Jumo 211 engine cases had been fitted. The museum reopened for the 2015 season on 5 April. DAVE BROCKLEHURST

AV-8B inducted at Pima

McDonnell Douglas AV-8B Harrier II+ BuNo 165574 was inducted into the Pima Air and Space Museum at Tucson, Arizona, on 14 February. It initially entered US Marine Corps service on 14 January 1986 as an AV-8B day attack aircraft and was remanufactured as a night attack Harrier II+ variant, with the addition of an AN/APG-65 radar and a separate targeting pod, during 2001.

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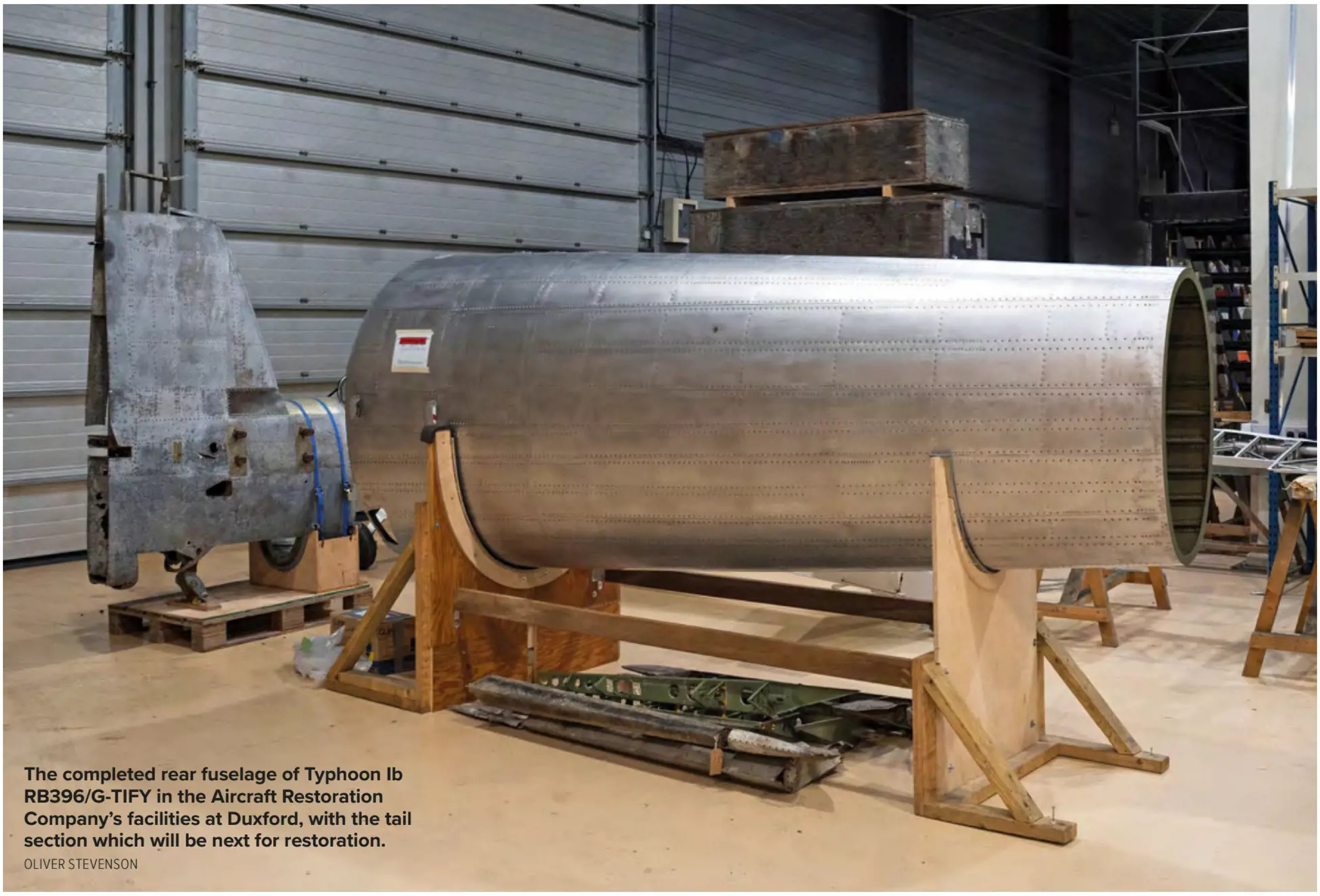
AV-8B BuNo 165574, which last served with US Marine Corps unit VMA-231, is Pima’s latest exhibit. PASM

SWIFT HEADING TO ST ATHAN

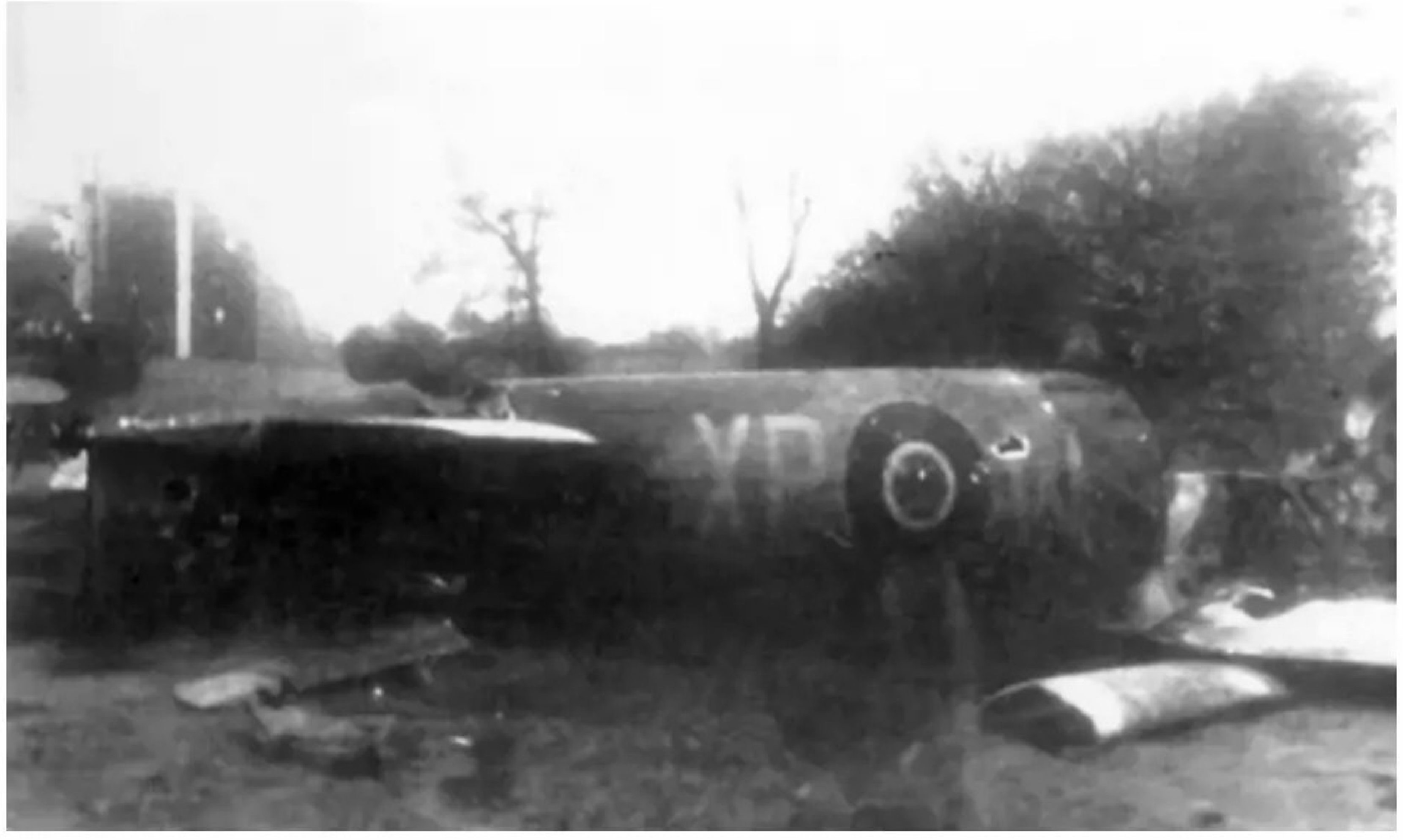
On 27 February Supermarine Swift FR5 WK277 was moved out of Hangar 2 at the Newark Air Museum and will soon be road-transported to the South Wales Aviation Museum at St Athan. The fighter had been on long-term loan to Newark since 1969 without any formal loan agreement being in place. During the spring of 2024 the trustees contacted the original owner of the Swift about some potential changes at Newark that may involve moving the fighter outside. During October 2024, the museum was notified that the Swift had been gifted to SWAM.



The completed rear fuselage of Typhoon Ib RB396/G-TIFY in the Aircraft Restoration Company's facilities at Duxford, with the tail section which will be next for restoration. OLIVER STEVENSON

ONWARDS AND UPWARDS

For the Hawker Typhoon Preservation Group, the 80th anniversary year of the shoot-down of the aircraft it's restoring to airworthiness brings the next phase of this unique project **WORDS:** BEN DUNNELL



The end of RB396's combat career after the forced landing in the Netherlands on 1 April 1945. Ironically, had the aircraft not been shot down and instead survived the war, the likelihood is it would have been scrapped like almost all other Typhoons. VIA HTPG

B100 Goch in Germany, an Allied forward airfield which later became part of the site used to build RAF Laarbruch, 1 April 1945. Hawker Typhoon Ib RB396 of No 174 Squadron gets airborne in the hands of Flt Lt Chris House, only six days into his assignment to the unit, to be part of a strike against mechanised enemy transport reported on roads close to Hengelo in the Netherlands. He would return, but his aeroplane wouldn't. Making his attack near the German town of Lingen, first with RP-3 rockets and then the four 20mm cannon, RB396 — which was named *Sheila* after the girlfriend of its regular pilot, Plt Off Frank Johnson — was hit by German flak. House completed a successful forced landing not far from Denekamp, just inside the Dutch border. Evading capture, on 3 April he rejoined his squadron. The wreckage of his Typhoon survived, the fuselage ending up being preserved by two Dutch museums before it was brought back to Britain in 2013.

Now, that same wartime relic is forming the basis of RB396's return to flight, and as the 80th anniversary of its loss is marked, the Hawker Typhoon Preservation Group has some recent milestones to look back on. At the end of October last year, the rear fuselage was ceremonially finished at Airframe Assemblies' premises at Sandown on the Isle of Wight. But while substantial — and the first fuselage section of the type to be made flyable since the war years — it was but the first part of the rebuild process.

As project director and trustee Sam Worthington-Leese said, "It went over [to Airframe Assemblies] in May 2019 following a successful crowdfunder, when we raised enough money to start the rebuild. There was no guarantee that we'd have the rest — we'd have to raise every penny. It was all going fairly well until COVID came along. The first year of COVID actually didn't really impact us, but then it was the second year when it really bit and peoples' finances started to feel the pinch. The rebuild had to be paused due to funding, and that lasted about 18 months. In December 2023 it restarted again, just before Christmas. The funding was all assured; we wanted to make sure we had that before we restarted.

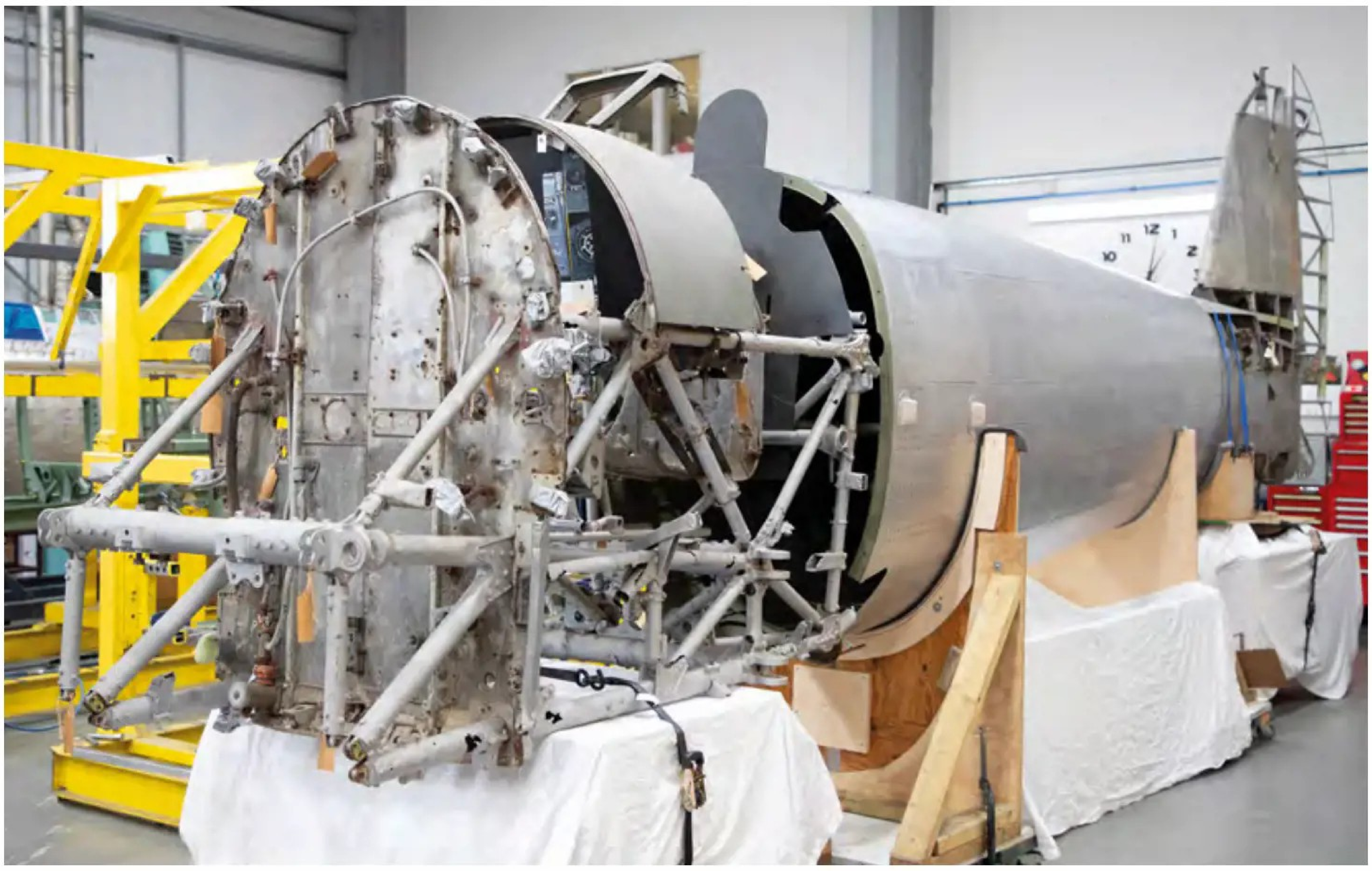
"From an engineering point of view, there have been a few troublesome things. With something that is effectively unique, the engineers are learning these things from scratch. They're coming across problems they don't see in Spitfires, Hurricanes, Mustangs and Buchóns, which are most of their trade. There was a lot of head-scratching, a lot of standing around looking at drawings, a lot of trying to find new drawings — there were some gaps in the amount of drawings we have. Some decisions we took collaboratively caused slight changes of path along the way: this is what we're facing, what shall we do about it?

"There are some really interesting engineering elements to it. One is the foot-step. It's very similar to a Hurricane, in that you open a hand-hold and the bottom bit pops down, but it's very complicated and there's quite a lack of drawings of that area. The RAF Museum was very helpful to us with that. Andrew Boakes, our research guy who's a volunteer on the team, paid a number of visits to the museum with access to the step, photographing all the angles for the guys at Airframe Assemblies so they could work with what they've got. That was solved, and it's working, which is great.

> ***"The engineers are learning the Typhoon from scratch"***

"Andrew has been invaluable... he lives in Kent, the museum is in London, Airframe Assemblies are on the Isle of Wight, the rest of the rebuild's at Duxford [with the Aircraft Restoration Company], and he's been going up and down, up and down. I think this section alone would have easily cost 20 per cent more, £100,000, if we were having to pay an engineer by the hour to do all this...

"We wanted to use as much original material from RB396 as possible. The original



The scene at Airframe Assemblies' Isle of Wight premises last October, when the rear fuselage had the project's cockpit and tail positioned with it. STEVE COMBER/COAP skins, obviously, couldn't be used but the frames and the stringers could. [Approximately] 80 per cent of the frames and stringers are original material. The stringers could not be used in their single sections — there were areas within that were not good enough to use — so there have been some elements that have been created from new.

"In the pictures you can see irregularities, if you like, in the riveting and you can see certain areas where there are patches where the rivets are much more densely spaced than the others, which are quite uniform. That has been taken from an authentic Hawker battlefield repair technique to enable this original material to be reused, rather than just creating full new lengths of stringer.

Helping the rear fuselage monocoque off the vehicle that delivered it to Duxford. OLIVER STEVENSON

Sam Worthington-Leese (right) inspects the fuselage section with Aircraft Restoration Company chief engineer, and well-known warbird pilot, Martin Overall. OLIVER STEVENSON

> *"Everyone we know who flew RB396 survived the war"*

"The interior paint is obviously a special type of paint [...] and the colour was found to not be what you might call the normal interior green that you see on all the warbirds today. It was quite a different shade. As we are building this aeroplane as authentically as possible, we thought we'd get it matched. A company offered to help match it, and they came down to collect samples and take them away. They came up with the colour shade, and then another company, Indestructible Paints, offered to cover the cost of making that paint specially for us.

"Lots of little things like that take a bit more time and, obviously, cost a lot more money. Using original material in the frames, for example: they have to be heat-treated, in and out of the oven, reshaped. Obviously, everything that's going to be reused has to be tested, whereas if you make it from scratch you kind of don't need to do those things. But we wanted to go down this route from the early days."

Access to a Tempest airframe, specifically that of MkV JN768/ G-TMPV which was acquired by the project in 2018, has been very important too. "The two rear frames of the rear fuselage were missing from our rear fuselage. But we have a Tempest rear fuselage, which, up until the point it was designated as a Tempest on the production line, could have gone in either 'pile'. That provided all the material for the rear two frames, including the joint. We've been able to make patterns for the canopy rails off the canopy rails that came from the Tempest, because they were the same. And, of course, if there's a piece of material on our aircraft — a frame, a stringer or so on — that can't be used but the same piece in another original airframe can be, we've taken the decision to use that rather than make the piece from new. It's not just RB396 in there.

"And that's going to go for the whole aeroplane as well, we have decided. It will cost more, there's no two ways about it, but where we have an original piece — even down to a bracket — that can be used, we will, because we want the aircraft to be a memorial to the Typhoon and, more importantly, to the air and groundcrews that operated them. If we can include a piece from an aircraft, that aircraft has a history, and more often than not that history will have a personal story that goes with it. When the time comes that this aeroplane flies, it might have 10, 20, 30, 50 or more personal stories woven into it. We think that's really important."

There was a choice to be made on whether to tackle the

The tail section is always the source of much Typhoon-related discussion, given the failures which occurred in service, and this one will now be the subject of the next phase of RB396's restoration. OLIVER STEVENSON

cockpit section or the tail next. Since restoring the cockpit will cost £20,000 a month for two years and the tail about half that for the same duration, it's been decided to go for the tail. That, says Worthington-Leese, "is a budget we can just about manage at the current level of support". It keeps progress going, which is obviously good in practical terms, and hopefully will bring another benefit. "When you can put that rear monocoque and the tail section together, it's quite recognisable. Same with the cockpit, but that would take a lot longer.

"Everything was transported back to the Aircraft Restoration Company at Duxford in mid-December… At the moment, ARCo are in the process of effectively assessing exactly what tail material we have. There's obviously the large section of which there are images, but there's a lot of other material in storage. We're going through that. We're also going through all the drawings, working out which ones we have and which ones we haven't, and trying to get access to MN235 at Hendon to scan its tail so we can then work out exactly what we've got.

"RB396 was a late-model Typhoon, so it incorporated what's commonly known as the Tempest tail, but it's not a straight 'cut-and-paste' from the Tempest. It's slightly different. RB396's fin is about 1in narrower than MN235's, which is an early Typhoon. The rudder, obviously, is different, but the bottom and the middle hinge-points are the same. We don't think the top one is, so we're confirming that. The tailplane and the elevator are the same, so the connection points are too. There's no definitive drawing that says after such-and-such a date, it was built this way and before that date, it was built that way — a bit like there isn't for the transport joint from the rear fuselage to the tail section. The drawings were just updated and edited.

"The issue we have is that the RAF Museum has been very, very good, but they're having a development at the Midlands facility and apparently, until that's completed, they're not allowing any scan requests. That work is not due to be complete until summer 2027. Great for them, updating the facility; not so great for us getting access to MN235 to give the tail a scan, because we were hoping the tail would actually be completed by 2027.

◆

"The purpose of the work ARCo is now doing is to give as accurate an estimate as possible for what this section of rebuild will cost, because we have to raise the money. We have some, but we certainly don't have all, so we need to know what we're working towards. As soon as they've finished doing that, it may be that we have to not scan MN235 — we can't wait two years — and work out what we have and whether we can fill the gaps with that, which might take a little bit more time and effort. And, obviously, more money because it's by the hour."

On the day the Typhoon rear fuselage arrived at Duxford, 17 December, Fighter Aviation Engineering's Tempest II MW763 was taken for some taxi runs. How long since an airworthy Tempest, and even part of a Typhoon, been out on the same airfield before? There was a poignancy in this, for MW763's restoration was masterminded by the late Richard Grace. Indeed, it was from him that Tempest JN768 was acquired in 2018. Part of that package was that the Typhoon project could use the jigs employed to rebuild the tail of MW763, and those who are now taking Richard's work forward at Air Leasing will soon bring those jigs over to Duxford. "That's going to save us thousands of pounds", states Worthington-Leese. "Richard was a massive help to the project over the years with advice, chats and just being generally interested."

It's just one of the memorable associations which have been made through restoring the Typhoon. Those with individuals closely linked to RB396 itself will be much in mind at the Tangmere Military Aviation Museum in West Sussex, where a gathering will commemorate the 80th anniversary of its combat loss. In attendance will be the family of No 174 Squadron Typhoon pilot Sidney Russell-Smith, who was only on the unit for a matter of days but flew RB396 for an armed recce mission on 28 March 1945, during which it was hit by German flak. Russell-Smith died in October 2022, aged 98. By that time he was the only known survivor out of RB396's pilots. But, as Sam Worthington-Leese notes, "Everyone we know who flew RB396 survived the war, which for Typhoon pilots is almost unheard-of."

The Russell-Smith family — just like the relatives of Chris House, the aircraft's final wartime pilot — are fully signed-up supporters of the restoration project. They are donating Sidney's Irvin flying jacket, but not to sell. One day, the plan is for it to be worn by another pilot when RB396 flies again. "It's a few years in the future yet", says Worthington-Leese, "but that will be quite special."

For more information and to support the project, visit hawkertyphoon.com

STEVE SLATER

Hangar Talk

A vintage light aircraft aficionado's view on historic aviation

Who was the world's first true flying instructor? Of course, a lot of pioneers were self-taught, but many point to Robert Smith-Barry who in 1916 created the 'Gosport' method. It was one of the first standardised forms of flying instruction and is still largely used today. But even before Smith-Barry, there was another, less well-known instructional pioneer. Frederick Warren Merriam is now unlauded, but he deserves recognition.

In the UK there were several busy flying schools before the First World War. Prime among them was the Bristol School of Flying, an offshoot of the British and Colonial Aircraft Company, which began operations at Brooklands in 1910 under the instruction of Maurice Edmond, using the company's Boxkite-type biplanes.

One of Bristol's earliest students was Merriam, who had been a relatively venerable 31 years old when he learned to fly in 1911. After qualifying at Brooklands, Merriam elected to remain at the school as a full-time instructor. He had already gained the accolade of becoming the first pilot to fly above the clouds in a Boxkite.

"No-one but a fool would attempt it", Merriam recounted. "Then after giving myself no chance to retreat I took off and started to climb. Visibility was even less than I had thought, and almost immediately I became completely enveloped in the clammy vapour. Never had I felt more alone; but after 500 feet or so I could see it was getting lighter.

Frederick Warren Merriam giving ground tuition in his two-seater at Whiteley Bank near Shanklin, Isle of Wight. ALAMY

> *"He seized the chance to develop a new style of dual instruction"*

"Then, with a breath-taking suddenness, I found myself emerging into brilliant sunshine with the infinite blue sky above. As I scudded along the top of the soft, white feathery plain, I felt as if I could have flown on and into eternity."

Back on earth, in September 1912 Merriam took over as senior instructor at the Bristol school at Brooklands. He seized the chance to move away from students graduating via passenger flights and solo 'hops' and to develop a new style of dual instruction. He wrote, "I sat behind the pupil giving him full charge of the rudder, but only part control over the joystick, until he had acquired the 'feel'. When a pupil was sufficiently advanced to be entrusted with the joystick I would push his body forward or backward or to one side and he moved the joystick appropriately. After short periods of 'direct' instruction, pupils began to do wonderfully well. Soon they were able to take me for reassuring circuits, and I knew what to expect on their first solos."

With a commercial imperative in 'passing' pilots with the minimum of flying hours and the least damage to machines, other schools rapidly followed Merriam's example. The Bristol school, though, was the clear leader in allowing new pilots to qualify, at an average of around two per week. As war loomed, of around 250 aviators' brevets awarded in 1913, 117 had come from the Bristol school.

Officially shortsightedness precluded his flying as a Royal Naval Air Service officer during World War One, so Merriam started an agency to place pilots in jobs with the early airlines and to promote export sales of British designs. He was a pioneer glider pilot and although his first sailplane crashed on the opening day of Britain's inaugural gliding event at Itford, it was rebuilt as a dual-control two-seater for the country's first gliding school at Shanklin on the Isle of Wight.

Merriam died in 1956 aged 76. One of his students, later ACM Sir Philip Joubert de la Ferté, recalled, "Even when he took an involuntary bath in the Brooklands sewage farm, his usual good humour did not desert him. I think it was probably this side of his character and his infinite patience that made him such a good instructor."

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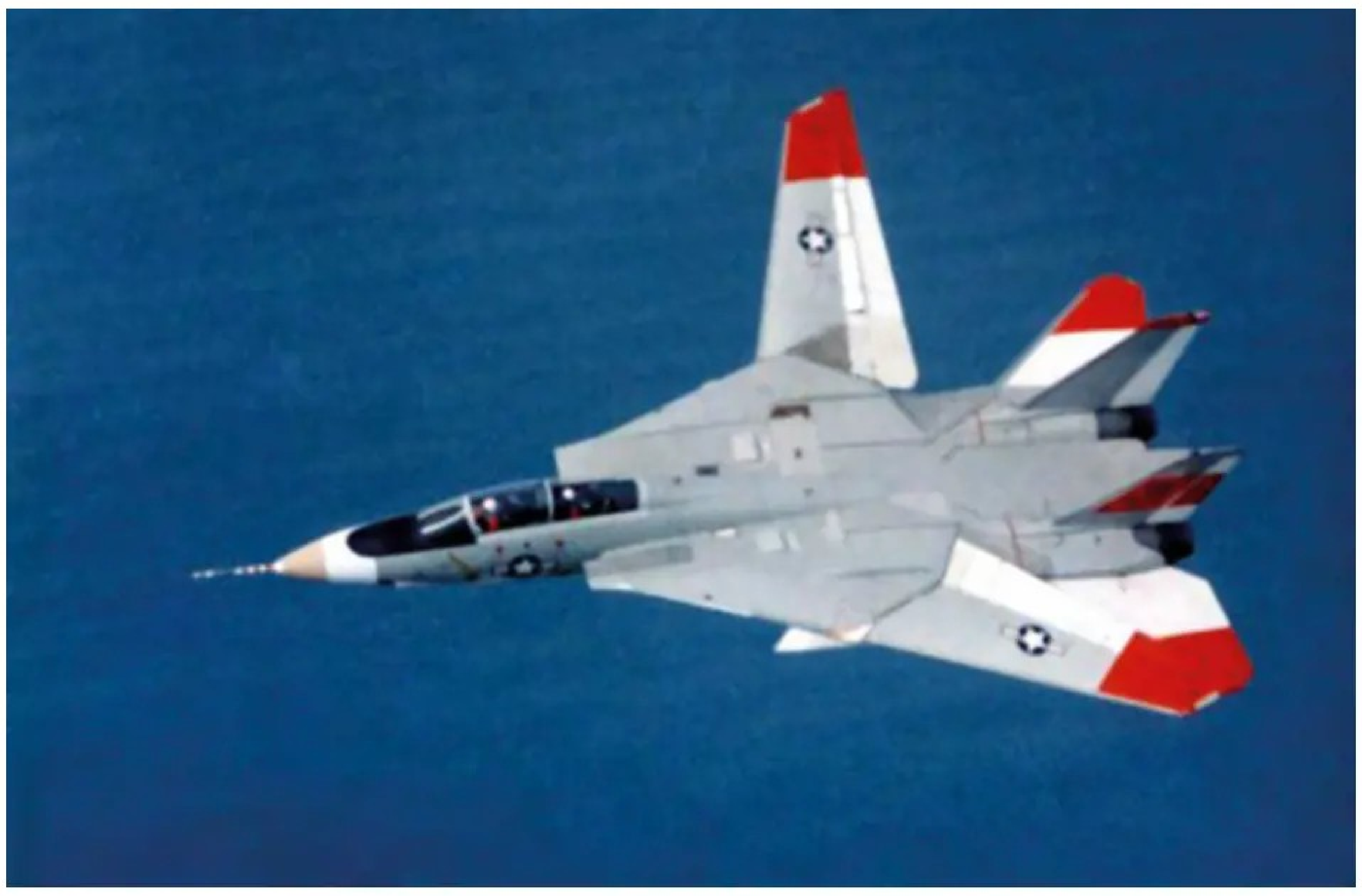
DENIS J. CALVERT

FlightLine

Recollections and reflections — a seasoned reporter’s take on aviation history

There’s an image that’s been doing the rounds for several years which shows an F-14 Tomcat flying with the starboard wing in the forward position with 20° of sweep while the port one is swept back. F-14A BuNo 157982, the third Tomcat produced, is said to have been involved in tests to determine how much control the pilot would have in the event of such an asymmetric situation, and whether landing back on a carrier would be a realistic possibility. Flown by Grumman’s chief test pilot Chuck Sewell in late 1985 and early 1986, these trials showed the aircraft could be trimmed for a stable approach for landing with one wing in anything up to a 60° angle of sweep, but not fully back at 68°. I’d dearly have liked to have met Sewell to ask about this fascinating story; sadly, he died in the crash of a TBM Avenger — another product of the Grumman ’Iron Works’ — in August 1986, so this will never happen.



The very asymmetric F-14A wing sweep trial. US NAVY

Other stories of US military aircraft remaining controllable in extreme or unplanned configurations are documented, some involving squadron pilots. On a number of occasions, F-8 Crusaders took off with their outer wings still folded, despite ensuring they were ‘down and locked’ being an essential part of the pre-flight checklist. The first such incident was in August 1960 at Capodichino, Naples. Following take-off, the US Navy pilot climbed to 5,000ft, only to find his aircraft feeling ‘heavy’ and responding slowly to control inputs. To his credit, once he realised his oversight — yes, his major oversight — he took time to examine handling in this configuration, reduced his fuel load and came in for a high-speed landing. Later similar occurrences included a night sortie by a VMFA-235 F-8E from Da Nang in 1966, the pilot noticing his mistake after an extremely long take-off run and when he noticed the red and green navigation lights flashing above and behind him. Once more, perhaps guided by word-of-mouth advice passed around the F-8 community as to how to handle just such a situation, he also achieved a safe landing.

> *“It could be trimmed for landing with one wing up to 60° back”*

Britain has seen comparable acts of derring-do. Sqn Ldr Bill Waterton, Gloster’s chief test pilot, suffered a catastrophic in-flight failure in Javelin prototype WD804 on 29 June 1952, when flutter at high speed resulted in the loss of both elevators. In a laconic transmission to the control tower at Moreton Valence, Waterton reported, “The stick is no longer connected to anything. The elevators went between Brize Norton and Witney”. While his initial thoughts were to fly to the Bristol Channel and eject, still at 20,000ft he decided to explore the Javelin’s handling in approach configuration. Gear down and flaps extended, he found he could keep some control of height and attitude with the application of engine power. With consummate skill and at a landing speed far above normal, he recovered to Boscombe Down’s 10,500ft runway, although a series of bounces resulted in the fuel tanks rupturing, the undercarriage collapsing and his being trapped in a blazing aircraft. Having managed to force open the canopy, he ran some distance from the conflagration, from where he directed the firemen’s hoses to try to save the all-important flight recording instruments in the tail and nose. For his actions, he was awarded the George Medal, although with his acerbic view of life he expressed the view that this was to keep discussion of the accident about “the man of the moment” rather than any failings of the Javelin. That said, he remains very much a hero in the best British tradition.

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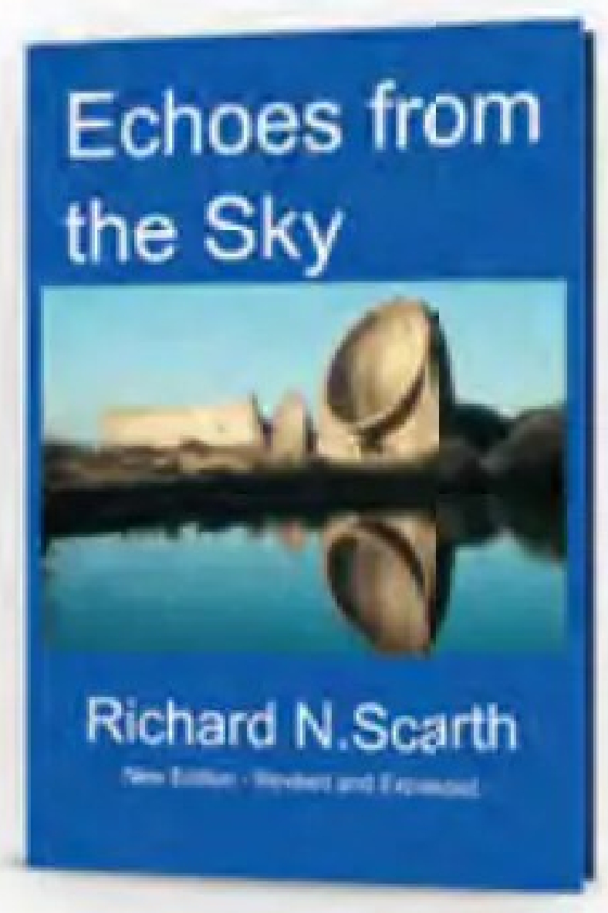
Echoes from the Sky
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by Ulrich Steinhilper and Peter Osborne

"Spitfire On My Tail" is the detailed account of how one German grew up and joined the Luftwaffe as a career officer and airman. It was written by Ulrich Steinhilper who was an Oberleutnant with JG 52 (52nd Fighter Wing) based at Coquelles near Calais.

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RICHARD CROCKETT

Join one of Shuttleworth's newest pilots on his vintage flying journey

Let's start this month with a little guessing game — even though the photo has already given it away! When speaking to any pilot lucky enough to fly vintage aircraft, you'll often notice a recurring theme. In fact, aside from perhaps my pieces on sailplanes, this particular type has featured in nearly everything I've written for *Aeroplane*. Ask a member of the public, and chances are they've heard of this aircraft. Many will even know someone who's flown in one, if they haven't experienced it themselves. In terms of numbers, it still has a strong presence today. There are around 170 of them on the UK civil register.

From a pilot's perspective, this aircraft tends to divide opinion — it's very much a 'Marmite' machine. Some love the challenge and nostalgia, while others, especially those who've flown its predecessors, are a little more cautious.

Yes, I'm talking about the de Havilland DH82 Tiger Moth. In excess of 8,500 were produced between 1931 and 1944, and it played a pivotal role in training tens of thousands of pilots, many of whom would go on to fly a wide array of Allied aircraft during World War Two.

Writing about the Tiger Moth isn't easy. A lot of you will already be well-versed in its development and operational history. In fact, plenty of you probably boast far more 'Tiger time' than I have in total. But, nonetheless, let me share my perspective.

Richard flies a practice display in the Shuttleworth Tiger Moth, G-ANKT.
DARREN HARBAR

For many pilots, the Tiger Moth is their first real taste of vintage aviation. It might be the first biplane you've flown. It could also be your introduction to taxiing with almost no forward visibility, no brakes, and limited steering thanks to the simple tailskid.

Once airborne, pilots used to more modern nosewheel monoplanes are in for a quick and lively lesson in rudder work. You'll likely spend the first few minutes chasing the slip ball across the instrument panel, trying to fly straight and level. Turning? That's a must — and you'll want to make sure your goggles are snug, because the slipstream won't be gentle as you wrestle with co-ordination.

Having mastered turning — though I'd argue there's no such thing in a Tiger! — you can move on to upper-air work: steeper turns, stalls, spins, and even aerobatics. In all these areas, the Tiger proves itself an excellent tutor. Circuit flying is straightforward, but for newcomers the approach can be a challenge. The limited forward visibility from the rear seat, especially with someone in front, may make judging the descent and touchdown a bit of an art form.

When it comes to landing, the Tiger offers three main options. There's the wheeler, where you gently ease the mainwheels onto the runway while keeping the tail in the flying attitude; the three-pointer, where the goal is to fully hold off the landing and touch down on the main gear and tailskid simultaneously; and then there's an unintentional blend of the two that often ends with an awkward bounce and a sheepish go-around, giving you another shot at getting it right.

As a trainer, the Tiger Moth is a true gem. With so many still flying in the UK, it's surprisingly accessible — and at a cost that won't require a second mortgage. Flying one offers a masterclass in vintage aviation and a glimpse into the training journey tens of thousands of pilots have experienced over its remarkable 94-year legacy.

And to those who might raise an eyebrow at its quirks and 'character-building' tendencies — honestly, where better to be than in the cockpit of a Tiger on a warm summer's evening?

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In every issue, the writer of our Letter of the Month wins a **£25 book voucher** to spend with leading military and transport publisher Crécy.

The British Aerial Museum's Blenheim restoration team at Duxford on 29 May 1987, receiving the Mike Twite Award — named after the original editor of *FlyPast*, killed in the 1984 crash of Varsity WJ897 — for their outstanding work. Pat Twite is presenting it to owner Graham Warner.

LETTER of the MONTH

The late John Larcombe chatting to onlookers on the day of the Blenheim's 'official' first flight. In the background, coincidentally given our coverage elsewhere in this issue, can be seen the Duxford Aviation Society's Super VC10 and Ambassador.

Good article on John Romain in the March issue. I met John at Duxford on the day of the 'official' first flight of the Blenheim/Bolingbroke restoration in 1987. On 22 May, I was in the UK again and I was driving by Duxford late in the day, en route to my cousin's home in Hockwold-cum-Wilton, Norfolk. I noticed an unknown twin-engined aircraft circling around the airfield, but didn't give it too much thought at the time.

A week later, on the 29th, I was off to spend a full day at Duxford and arrived to find the 'Boly' with the engines running. This was to be the 'official' first flight day, and it flew three times. I shot about 60 slides of the various flights, ceremonies and so forth. Somebody on the other side of the fence recognised me and I was invited inside to participate in the celebrations and have tea and sandwiches with the wartime Blenheim aircrew in attendance. I met John Romain, John Larcombe, Graham Warner, Mike Twite's widow Pat, Ken Ellis and others. John Larcombe told me he was flying regularly into Vancouver, and I invited him to come out to the Canadian Museum of Flight and see our Hampden.

In 1979, when I was in the UK for the first time, Ted Inman arranged for Peter Lovejoy to give me a personal guided tour of some of the restoration buildings at Duxford. I took some good shots inside the Blenheim building, and in another room that was packed full of 'Boly' engines being sorted out to make two runnable Mercuries out of 19. Another building held Robs Lamplough's Israeli Mustangs.
Jerry Vernon

I'm writing to let you know how much I enjoyed your article about John Romain in the March *Aeroplane*. It was absolutely riveting! What a remarkable career. I have followed it pretty well from the beginning, but to put it in context with all the extraordinary characters he's been involved with was just incredible. From 'hangar rat' to the consummate aerobatic pilot who flew that fabulous display in the silver Spitfire with the Comet at Shuttleworth last summer is quite amazing. We owe him so much.
Roger Colbeck

34
GROSVENOR HOUSE
G-ACSS
RN201

Another excuse to show the Comet/Spitfire XIV formation at Old Warden. BEN DUNNELL

I'm a volunteer at the Farnborough Air Sciences Trust Museum, and read your Database on the Jaguar in the February 2025 issue.

At the FAST Museum, in 2024 we took over the RAE Bedford archive with all its pictures. I was given the task of sorting through the digital images and among these was this shot of the Jaguar M on the Bedford raised catapult. We have a number of other pictures of this aeroplane at Bedford, plus thousands of other images from the time Bedford was in use.
Michael Lacy

The Jaguar M on trial at Bedford.

I thoroughly enjoyed reading the excellent March issue, which certainly took me down memory lane — in particular, the fulsome article on Mike Lithgow who I had the pleasure of meeting in 1955 at Cologne/Bonn Airport, otherwise known as RAF Wahn. Mike was the first aviation manufacturer's pilot I ever met and he made a striking impression on me as he patiently explained the principal features of the Supermarine Swift, which he had brought as part of a small SBAC contingent of aircraft trying to impress representatives of the newly emerging German Luftwaffe.

I was flying Meteor NF11s with No 68 Squadron, and little did I know then that if he hadn't tragically died some years later in the prototype BAC One-Eleven, he might have been my boss when I joined BAC as a One-Eleven test/training pilot in 1968. What I do know is that as a result of the modifications incorporated into later One-Elevens, namely revised wing leading edges, powered elevators, stick shake and push, auto-ignition and so forth, I was able to safely demonstrate the stall protection systems of production examples to many customer pilots, for the 30 years I flew globally what I regard as a fine aircraft — a pilot's aircraft, for those who know what I mean. Years later I also attended the inauguration of the tasteful memorial stone situated in Chicklade by a leafy lane very close to the site of the tragic crash, a most beautiful place.

I was also pleased to see the picture of David Lockspeiser's LDA-01, of which I witnessed the first flight at Wisley. Delighted — in fact, amazed — to see it actually fly, I remember being slightly confused at a distance by its canard configuration and not knowing whether it was coming or going! David shared an office next door to mine at Wisley with the equally unforgettable 'Dizzy' Addicott and I clearly remember the various jottings and diagrams on the large sheets of blotting paper on their desks, some eventually to bear fruit. 'Dizzy', apart from VC10 testing, was also flying the Vickers Vimy replica.

Two more pictures in the issue grabbed my attention, namely Jock Bryce and Alex Henshaw, two delightful men I was privileged to meet, but regrettably never to fly with. In my 30 years of flying in the aircraft industry I met and flew with quite a lot of other pilots and they were a special band, of whom Mike Lithgow was a prime example. Thank you for remembering them.
Alan Smith

BRITISH UNITED

Mike Lithgow with flight test observers Tony Neve and Dick Wright, and BAC chief test pilot Jock Bryce, in front of the prototype One-Eleven at Hurn after its roll-out. BAE SYSTEMS

I was finding the *Coastal Command* film article in the March issue interesting when a name from my past popped up: Peter Moon. In late 1969 as a young and junior flight lieutenant, I was employed on administrative tasks, such as camp commandant for six weeks of Royal Observer Corps camps, while my medical discharge was processed. My boss was OC admin wing, Wg Cdr Peter Moon. I do not recall his wearing an aircrew brevet, but I heard he had served on Sunderlands, on one occasion as the hand on night watch saving an aircraft from dragging its mooring. He had joined the RAF at 16 with no educational qualifications. To be a flight sergeant so few years later was a big achievement. To be commissioned and retire as a group captain says much of the person he was. Years later he called at Royal Lymington Yacht Club where I was secretary, and invited me to lunch at Barton on Sea Golf Club where he was then captain. Peter Moon was certainly a man to remember.
Wg Cdr Ian Gawn RAF (ret)

You kindly printed a letter in the January 2023 edition relating to a Shorts advert in December 1942. I have now organised a charity cycle ride following my father's Long March route from Stalag Luft III in Poland to his final camp 60km south of Berlin, setting off on 5 May before finishing in Berlin itself on 8 May at the famous Neue Wache memorial.

We are a small team consisting of PoW relatives and friends — including the son of one of the Great Escapers — and two RAF veterans, one of whom flew Tornados in the first Gulf War. We are planning to raise money for various military charities as well as Coventry Cathedral, my dad and I both coming from the city, and the Stalag Luft III museum. To donate, visit www.givewheel.com/fundraising/6390/long-march-80th-anniversary-charity-cycle-ride
Stuart Green

The editor reserves the right to edit all letters. Please include your full name and address in correspondence.

Q&A

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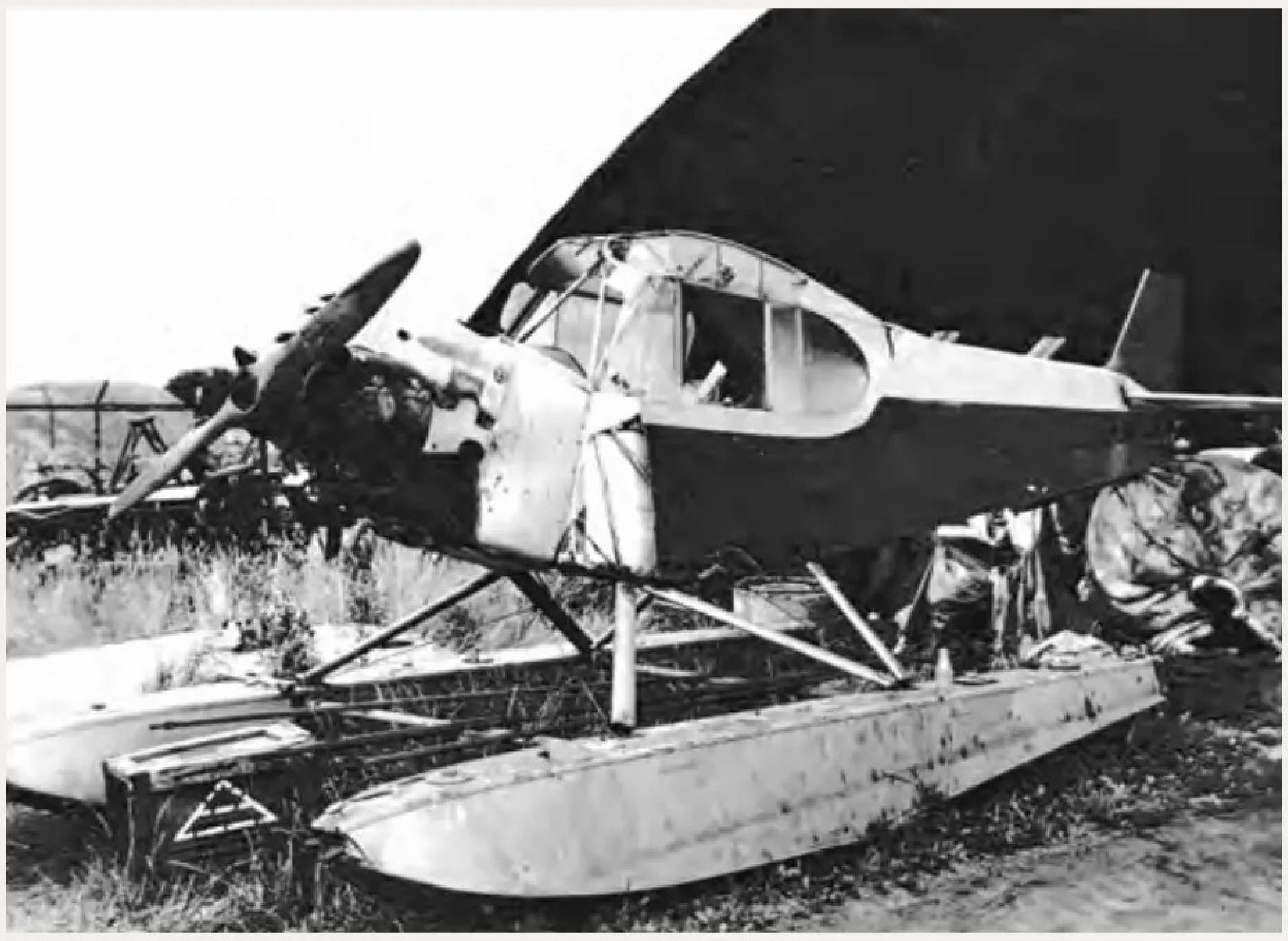
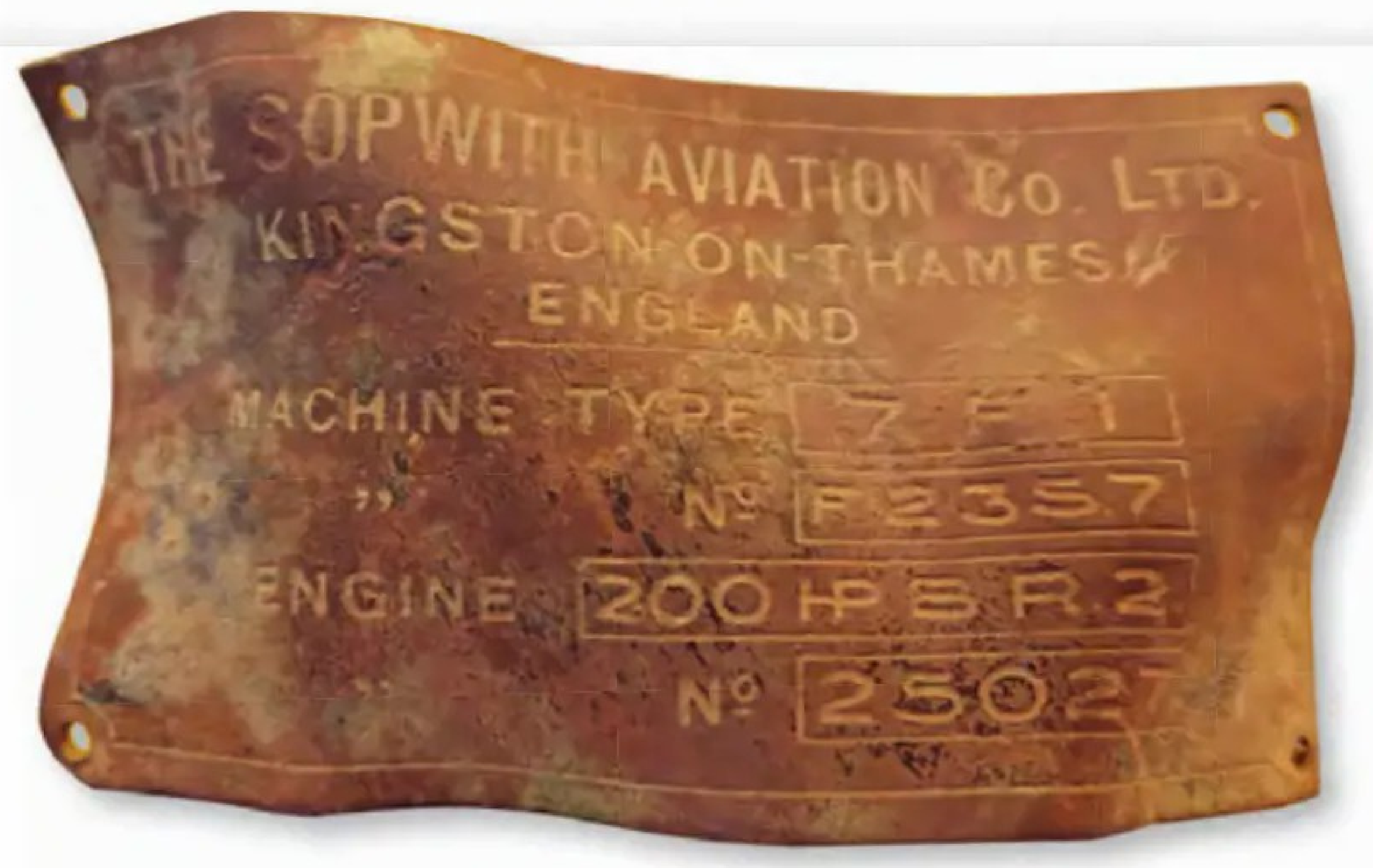
Are you seeking the answer to a thorny aviation question, or trying to trace an old aviation friend? Our 'questions and answers' page might help

THIS MONTH'S QUESTIONS

Cub at Gatwick

Q In the January issue, Christopher Harris asked if anyone could add to his letter on aircraft at Gatwick in the post-war years. Colin Ford from Queensland, Australia, e-mailed a picture of a Piper Cub floatplane that was seen at Gatwick's A. J. Walter facility in the mid-1950s. Apparently it had been flown from the USA by a teenager whose goal was to reach England, but was forced to land at sea alongside a merchant vessel, resulting in both the Cub and the young pilot being hoisted aboard. Clearly, both arrived in the UK, but when seen at Gatwick the aircraft carried the notice, "Not to be removed without sanction from the Receiver of Wrecks Custom House Southampton". The notice cannot be seen in the photograph, but Colin would like to know whether it was scrapped or put on the UK civil register after repair/overhaul. Around that time, the A. J. Walter company rented out a Cub on a 'fly yourself hire' basis — could that have been the aircraft in question?





Missing Snipe

Q A recently discovered manufacturer's plate in the area of Lympne airfield in Kent has the serial number F2357, which refers to a Sopwith 7F1 Snipe. Records indicate the aircraft was in a batch of 200 Snipes serialled F2333-F2532, ordered for the RAF from Sopwith in 1918, but with some late-war contracts cancelled as hostilities came to an end, clearly the unearthed plate indicates some were built and flown post-war. Anthony Moor wondered if someone could enlarge on this curious 'find.'

'Super Dak' at Aberdeen

Q Back in 1966, Warwick Banks often flew a Cessna 337 Skymaster out of Brough, with Aberdeen a regular destination connected with Marr's trawler fleet. A noted visitor was an American military Douglas 'Super Dak' with the callsign 19191, regularly followed there by a DHC Beaver, but using UK civilian radar. Does this scenario register with any reader? Presumably the 'Dak' was operated by the US Navy, but whose was the Beaver, what was the connection and where were they based?

THIS MONTH'S ANSWERS

The Komet on show today in Munich, sporting no serial.
DEUTSCHES MUSEUM

Me 163 to Munich

Q In the February issue, Philip Pain sought the Werknummer of the Me 163 handed over to the Deutsches Museum in November 1964.

A Maximilian Meindl forwarded the request to his father-in-law, a former curator of the aviation section of the museum. He confirmed the exact identity is still unknown, despite the effort of CT-scanning the aircraft to determine if the number was on the original airframe.

Spitfire elevators

Q Last month Barrie Purslow questioned the reason why Spitfire elevators appear to be down from the neutral position.

A Richard Cooke provides an explanation that pilots often trim for level flight or a specific attitude without constant control input. He says, "On the Spitfire, this could result in the elevator being slightly deflected downward to counteract the natural nose-up tendency of the aircraft. Regarding aerodynamic forces, the airflow over the tailplane and elevator creates forces that can cause the elevator to settle in a slightly downward position, which is part of the aircraft's design to ensure stability and control.

"Regarding the centre of gravity, this affects how the elevator is positioned during flight. A forward C of G might require more downward deflection of the elevator to maintain balance. Notably, the Spitfire's elevator is aerodynamically balanced to reduce control forces; the design can make the elevator appear slightly deflected even when the aircraft is flying straight and level."

Can any Spitfire pilots add to this, we wonder?

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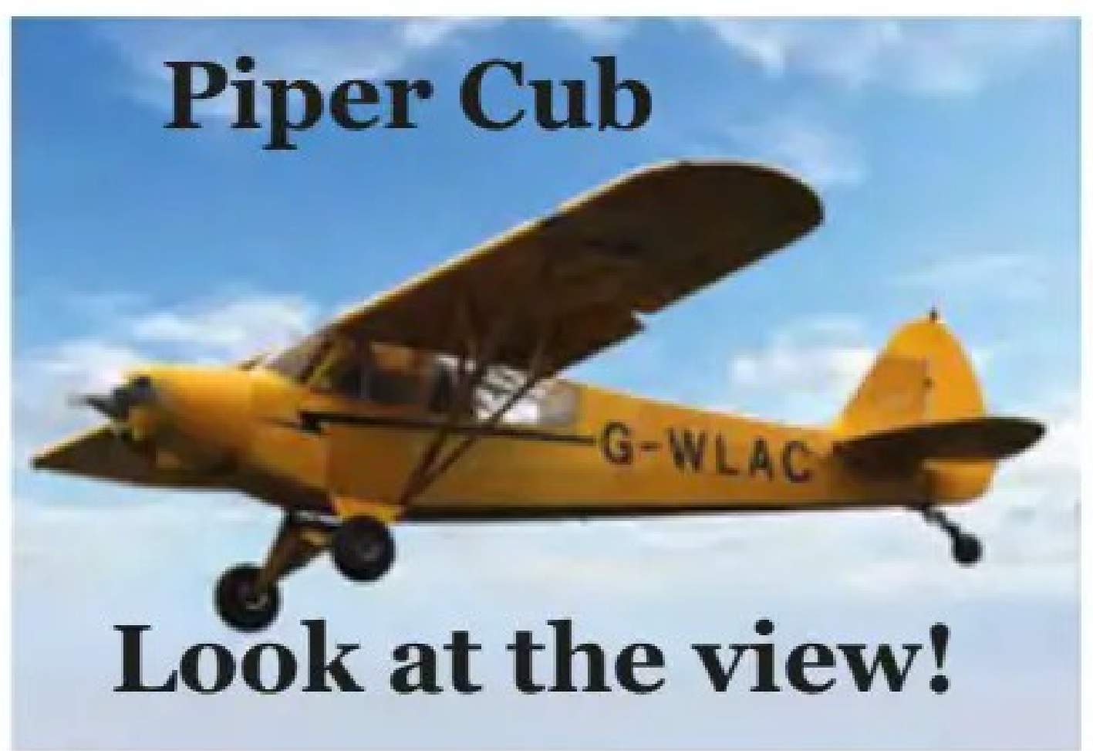
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Assessing the most important events of the 1939-45 European air war

Victory 80

Any number of episodes that led up to Victory in Europe, declared on 8 May 1945, could be viewed as the most significant in the theatre's aerial conflict. Defeating the Luftwaffe in the Battle of Britain might rank as one, the much later success of the D-Day invasion another. But what of those that changed the course of events more subtly, the turning-points that shaped the key campaigns on either side? From the shock of Germany's Blitzkrieg to the relentless pounding of the Allied heavy bomber offensive, over the next 11 pages five of *Aeroplane*'s leading authors on World War Two subjects make their thought-provoking choices as to the key events...

THE SILENT MENACE

The German assault on Èben-Émael, May 1940

WORDS: JAMES KIGHTLY

ABOVE: A wrecked DFS 230 following its arrival at Èben-Émael. The gliders involved in the operation were apparently all unmarked.

Silently they came out of the pre-dawn sky, crash-landing on top of the giant earth, concrete and steel fort. The well-equipped, grey-clad soldiers rapidly debouched from the DFS 230 gliders and swarmed the fort's key defensive points. To the shock of the defenders, they swiftly neutralised the state-of-the art fixed defences and captured the surrounding bridges. The attack on the neutral Belgian fort at Èben-Émael by the Luftwaffe Fallschirmjäger troops in May 1940 was an ultra-modern solution to a traditional defence. This was the application of a new kind of air power.

On 10 May 1940, as part of 'Fall Gelb' (Plan Yellow), the German attack on the Low Countries and France, a force of glider-borne troops was used to capture the strategically crucial fort at Èben-Émael and the bridges over the surrounding Albert Canal, enabling the Wehrmacht main force to smash into and through Belgium. The attack was made without a declaration of war against Belgium, in part to achieve surprise.

Four assault groups were formed, three to capture the canal bridges, one — Sturmgruppe 'Granit' (Granite) under Oberlt Rudolf Witzig, comprising 85 men in 11 gliders — to capture the fort. Gliders were selected specifically as their almost noiseless flight would evade the Belgian sound-detectors, with the towing aircraft able to release them from a distance. The gliders also had several advantages for their occupants when compared to arriving as parachutists: the Fallschirmjäger parachute had a single attachment point, so the parachutist experienced an uncontrolled descent, and their rifles and other equipment were dropped separately, normally taking 15 minutes to be ready to fight. A glider arrived with 10 men, together, armed and ready. At Èben-Émael that armament included flamethrowers and explosives, including early shaped charges which, despite some problems, proved effective.

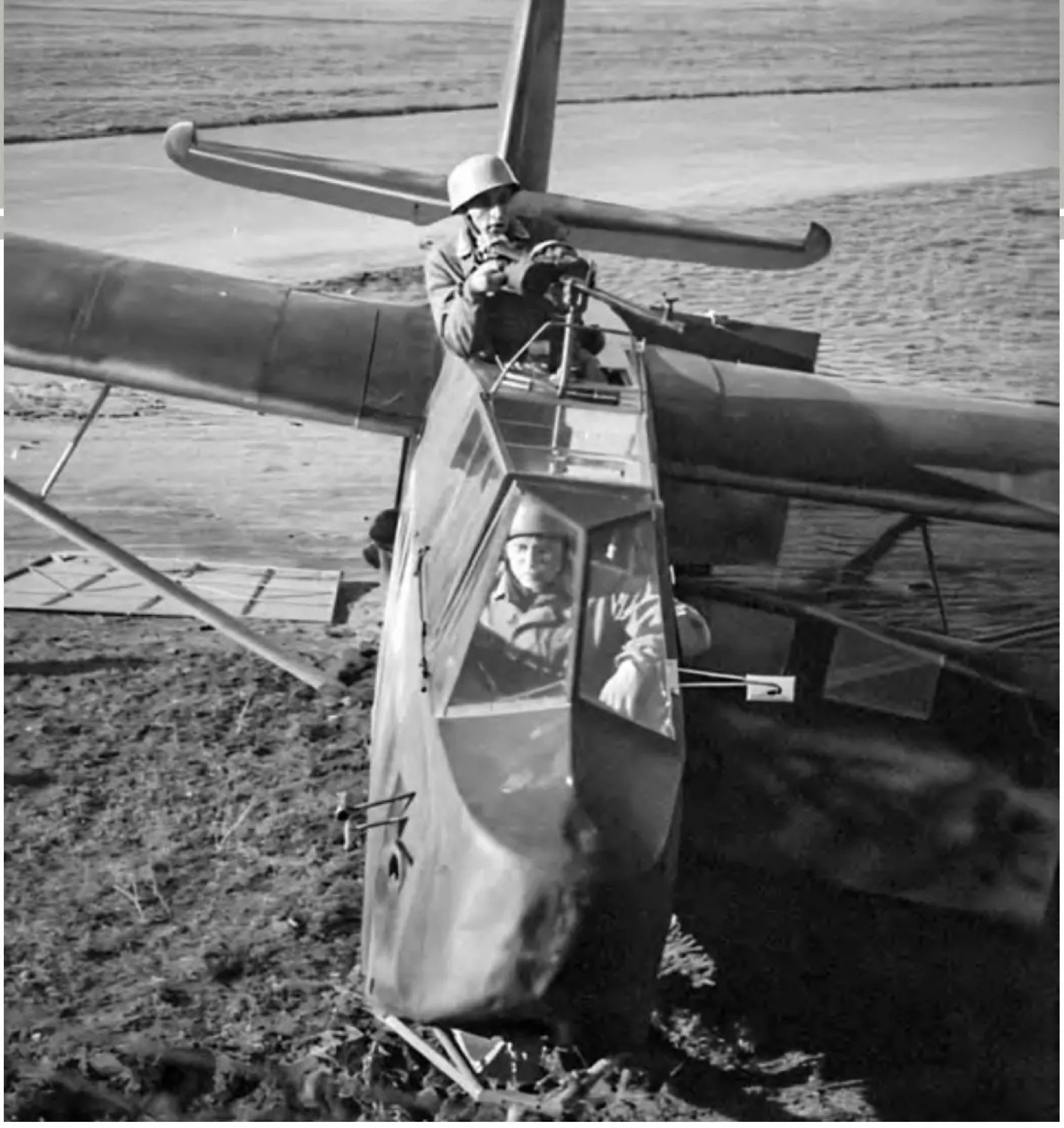
The DFS 230 was the first practical military assault glider. Its use in this attack set the copybook standard for a coup de main — swift, single-stroke surprise attack — glider assault. Designed by glider specialist Hans Jacobs, the Deutsche Forschungsanstalt für Segelflug (DFS) 230 was based on a pre-war design of a 'large' glider for meteorological research. Of conventional layout, first flown in 1937, it was big for a glider of the era but small compared to later military gliders.

Flown by a single pilot at a towing speed of 120mph, it could carry 2,800lb of equipment, enabling the normal load of 10 men (including the pilot) to be amply equipped and armed. The normal tug aircraft was the ubiquitous Junkers Ju 52/3m. The structure of the glider comprised a steel tube-framework fuselage with fabric covering, and wooden wings — it was awkward, cramped and did not offer much protection.

To take off, the DFS 230 used a jettisonable two-wheel dolly; it landed on a central skid, which could be wrapped with barbed wire to shorten the landing run. The tug normally used a 230ft-long cable. To achieve surprise, the pilot cast off at 6,500ft, 20 miles from the

RIGHT: Propaganda imagery showed Fallschirmjäger rushing forth from a DFS 230 on the battlefield.

BUNDESARCHIV



LEFT: A demonstration of how a single 0.3in MG 15 machine gun could be mounted on a DFS 230 for defensive purposes. BUNDESARCHIV

objective, approaching silently. He would then fly his DFS 230, which had an excellent glide ratio of 8:1, at about 115mph. The landing was a dangerous and tricky task, with the landing zone usually only being known from reconnaissance, and therefore untested. The DFS 230 was equipped with wing spoilers as standard, and braking parachutes were normally fitted to aid the short landing capability. Later, forward-firing retro-rockets were used. Yet landings were often rough, and injuries to the 10 men sitting astride a bench in the middle of the glider were common.

Although the role of the Fallschirmjäger was ground combat, they were part of the Luftwaffe, not for any doctrinal reasons but because Hermann Göring would not let any air element of the German state out of his direct control. The Fallschirmjäger were the first of the airborne troops to see combat, and thus were the first to establish a reputation as elite, capable soldiers, tarnished by several war crimes.

> ***“This was the application of a new kind of air power”***

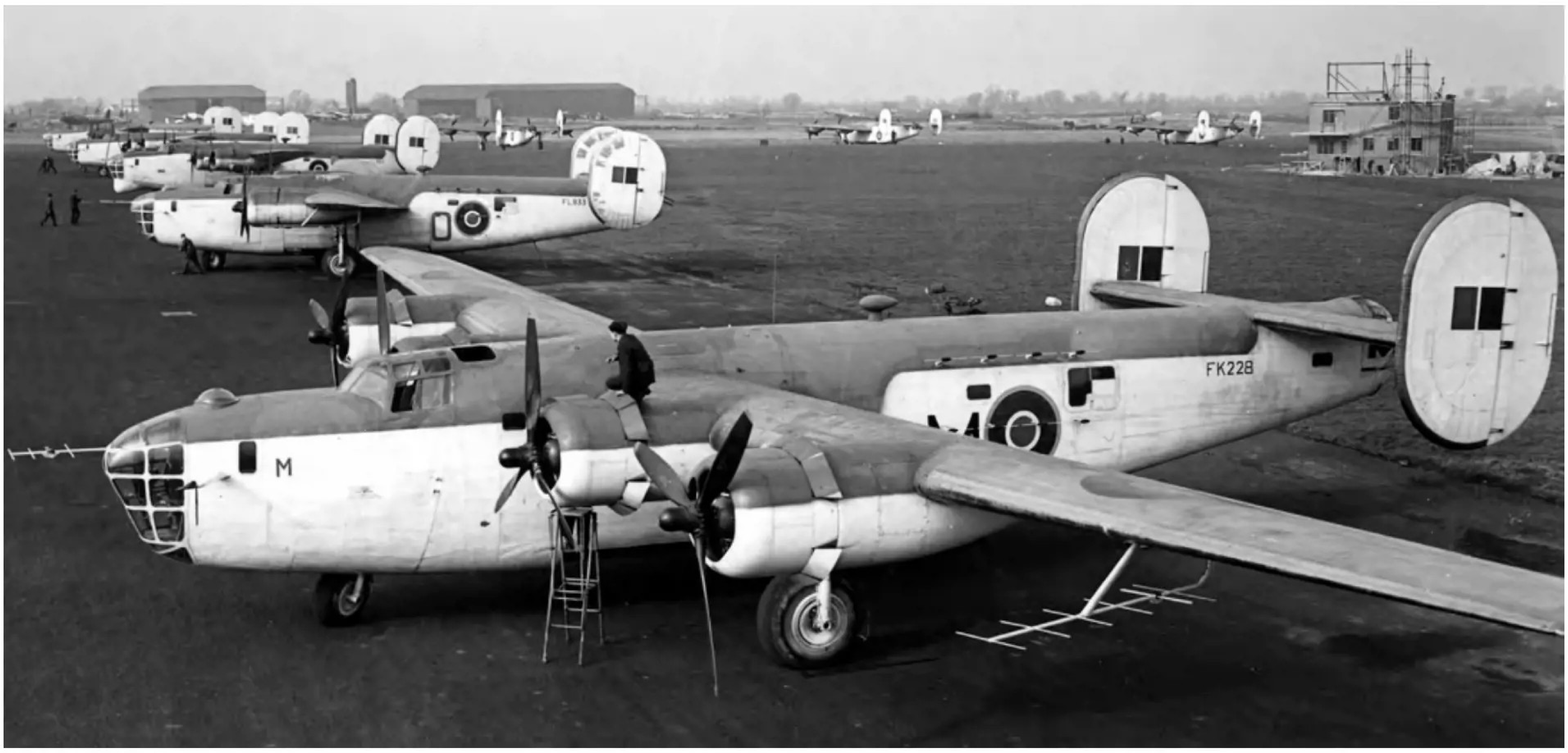
Their flexibility was well-illustrated by overcoming a potentially catastrophic problem in this Belgian operation. The commander, Oberlt Rudolf Witzig's glider's tow rope broke, and he and his team landed in Germany. A second glider was accidentally slipped early, reducing the attacking force's numbers significantly. His deputy, Oberfw Helmut Wenzel, took command, and under the Fallschirmjäger's doctrine — “You must grasp the full meaning of an operation so that, should your leader fall by the way, you can carry it out with coolness and caution” — he was able to successfully carry out the attack despite being a glider and 10 men under strength, until Witzig arrived. Witzig had radioed for a replacement DFS 230 and tug, and after clearing and using an extemporary runway managed to rejoin the battle in a new glider, albeit under heavy anti-aircraft fire, the surprise element having long gone. Nevertheless they had subdued a fort in hours. A German assessment stated that doing so by conventional means would have involved a heavy attack lasting six months.

The highly effective use of gliders by the Germans as part of the combined Blitzkrieg in May 1940 was a demonstration not missed by Britain. The British and Americans were to undertake glider assaults on a far larger scale, with bigger gliders in much greater numbers, up to the Rhine crossing in Match 1945.

World War Two saw numerous startling developments in warfare, technologically, tactically and in other ways. Gliders were used as part of a major attack, such as crossing the Rhine or the advance to Arnhem; for coup de main attacks, such asÉben-Émael and Pegasus Bridge; or for specialised tasks, such as rescuing Mussolini from Gran Sasso. Military attack gliders were a major aeronautical element and a mature weapon from that night in May 1940. However, while there was one major post-war British military joint exercise which featured heavy use of the later glider types — Exercise 'Longstop' at Netheravon in 1947, with Airspeed Horsas, GAL Hamilcars and a Waco Hadrian — there has been no occasion since when glider-borne troops were a part of a major military assault. The military glider proved to be a one-war weapon.

Certainly there are numerous contenders for the most significant event of the European air war, as we see here. The attack onÉben-Émael must be included in this list, as unequivocally it radically changed the shape of battle by the application of air power.

LEFT: Hitler with Knight's Cross recipients as a result of their part in the Fallschirmjäger's capture ofÉben-Émael. ALAMY



ABOVE: Parked at Aldergrove during the first week of April 1943 is Liberator GRIII FK228/M, in which Sqn Ldr Isted's crew had attacked a U-boat on 18 March during the critical battle around convoys HX229 and SC122. VIA J. D. OUGHTON

PLUGGING THE GAP

Introduction of the Liberator by RAF Coastal Command, August 1941

WORDS: ANDREW THOMAS

The most sustained and critical battle fought by the RAF during World War Two was in the Atlantic, where the cutting of the convoy routes from the Empire and Dominions and, particularly, from North America would at a stroke have lessened Britain's ability to wage war. Winston Churchill, never one given to hyperbole, later wrote of how the U-boat peril was the only thing that really frightened him.

Due to the range limitations of Coastal Command's aeroplanes, a 'mid-Atlantic gap' in air cover occurred when convoys left the protection offered by patrols flying from Britain and Iceland, until Royal Canadian Air Force aircraft from Nova Scotia and Newfoundland were close enough. This gave the U-boats a relatively safe hunting ground, of which they took full advantage. It was to extend the air cover that No 120 Squadron formed within Coastal Command to pioneer very long-range (VLR) patrols with the new Liberator I, a small number of which had been made available, and which offered a significant range increase over other types. It began forming at Nutts Corner near Belfast, Northern Ireland under the command of Wg Cdr Bill Cumming DFC on 2 June 1941, though the first operational aircraft was not delivered until 7 August. As further examples arrived the squadron continued training and solving a number of teething problems on this complex type. The Liberator I had a far greater radius of action and fitted with ASV (air-to-surface vessel) radar, a tray of four cannon under the forward fuselage and eight depth charges, it was a formidable combination. Deliveries were slow and there were seldom more than nine aircraft available, but nonetheless it offered the potential of some relief to the hard-pressed convoy escorts further into mid-Atlantic.

Operations began on 20 September when Flt Lt Jack Harrison flew an anti-submarine sweep in Liberator I AM924/D. The first U-boat attack was on 22 October, Flt Lt Bulloch's crew escorting convoy SL89 and inflicting damage to U-203. Despite their small numbers, the potential presence of the Liberators in areas previously safe was adding to the tactical problems of the U-boat crews. Three Liberator IIs arrived during November to supplement the hard-worked MkIs. They were certainly needed as the submarines moved further into the Atlantic and shipping losses continued to rise. U-boats also began interfering with shipping off the coasts of North America but thus had to transit across the great ocean, offering potential opportunities for attack.

By the summer of 1942, with the establishment now including some Liberator IIIs, No 120 Squadron was engaged in the increasingly ferocious battles against U-boats around the Atlantic convoys in the face of heavy shipping losses. Its strength had increased as of September to six MkIs, two MkIIs and three MkIIIs, though it remained the only Coastal Command squadron flying VLR Liberators. To widen its patrol coverage, in early October seven aircraft were detached to Reykjavík in Iceland; they were soon in action. On the 12th Sqn Ldr Terry Bulloch in AM929/H attacked and sank Kapitänleutnant Eberhard

Bopst's U-597 480 miles south-west of Iceland. This first sinking provided a great fillip for the squadron and was further proof as to the efficacy of the VLR patrols.

Further action came in December when, south-east of Cape Farewell, Greenland, a pack of 22 submarines was ranged against convoy HX217 from Halifax. Sqn Ldr Bulloch's crew, flying AM921/B astern of the convoy, made out the wake of a U-boat despite very poor visibility on the late morning of the 8th. They straddled U-611 with six depth charges, and it went down with all hands. Later during the same patrol, they attacked seven more submarines, forcing them to submerge. This crew was relieved by another that drove down five more U-boats, completely disrupting their attack. The submarines had been sailing on the surface believing they were out of range of land-based aircraft and as a result lost contact with the convoy. Soon afterwards, No 120 Squadron received the praise of the Air Officer Commanding-in-Chief of Coastal Command for "having undoubtedly saved the convoy from serious loss."

Through the winter the Kriegsmarine redoubled its efforts to cut the Atlantic supply routes, and come mid-February 1943 the squadron had a dozen Liberator GRIIIs and just five of the older MkIs. Although now based at Aldergrove, most operations were flown out of Iceland from where VLR anti-submarine sweeps extended well to the south of Greenland, regularly sighting U-boats. One was on 15 February when Fg Off Reg Turner's crew flying MkIII FK232/S sank U-529. Six days after that, Sqn Ldr Desmond Isted's crew flying from Aldergrove in support of ONS 166 sighted two U-boats and sank the first, Oberleutnant zur See Hermann Schröder's U-623. The same crew forced two U-boats to submerge on 11 March before attacking a third. 120's crews now achieved an astonishing run of success. Its Liberators helped to disperse a pack massing against convoys HX229 and SC122 south of Greenland during mid-March, though despite the best efforts of the escorts they lost 21 ships.

The battle around convoy HX231 began in early April, with six ships lost on the 4th, but the next day Fg Off Gordon Hatherley's crew was credited with sinking U-635 while the 6th saw U-594 being damaged. More than 60 U-boats gathered against a slow convoy late in the month, and the squadron's efforts continued unabated. On 23 April Fg Off John Moffatt's crew spotted two submarines east of Cape Farewell, sending U-189 down by the stern; 50 survivors were left in the water.

May proved to be the climax of the Battle of the Atlantic as the U-boats battled to maintain the pressure while the surface and air escorts desperately fought them off. Convoy ONS5 was attacked by a wolf-pack in early May and, although 13 ships were lost, six U-boats were sunk and the attack was called off.

A fortnight on, U-boat packs planned a mass attack on convoy SC130, which was ultimately thwarted, the Liberators of No 120 Squadron playing a crucial part in this battle. South-east of Greenland on 19 May, Flt Sgt W. Stoves's crew sank U-954 — among its crew was the son of Grand Admiral Karl Dönitz, commander-in-chief of

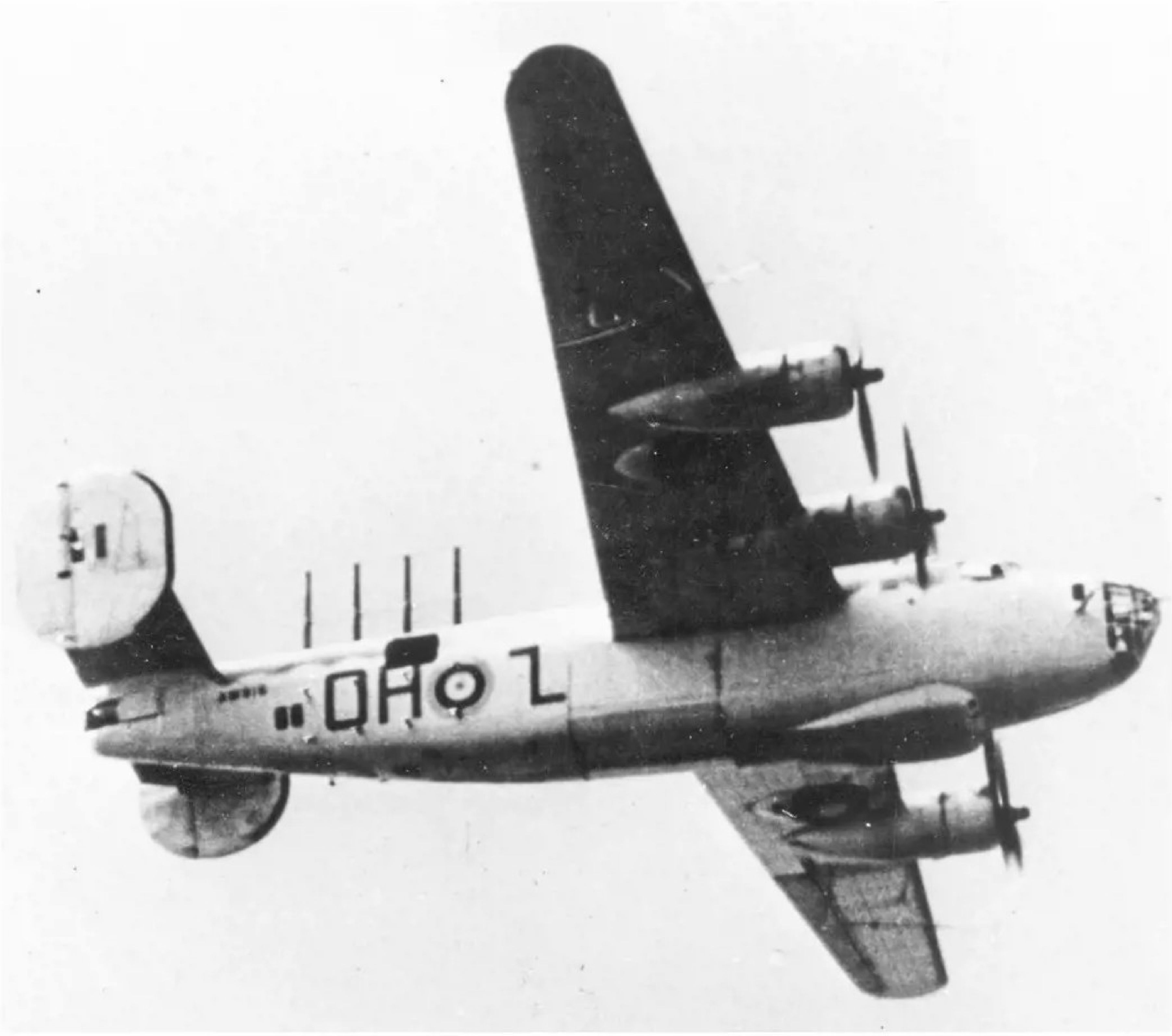
LEFT:
Depth charges explode around U-597, under attack off Iceland on 12 October 1942 by Liberator I AM929/H. It was the first submarine sunk by No 120 Squadron.
CROWN COPYRIGHT

LEFT:
A Liberator patrols low over a convoy as it battles through the rough Atlantic waters in 1943.
VIA J. D. OUGHTON

the Kriegsmarine. Continuing their patrol they saw five more U-boats, forcing them to crash-dive and alerting naval escorts to continue prosecuting the contacts with ASDIC, the British version of sonar. The relieving crews did further damage. Sqn Ldr Jimmy Proctor's attacked several submarines the following morning and sank U-258, while Flt Lt McEwen's saw five and attacked two. Air coverage was suspended during the night but restored at first light on the 20th. Over the course of the two-day battle, seven Liberator crews sighted 24 U-boats, forcing 16 to submerge. En route to escort HX240 on 28 May, Fg Off Donald Fleming-Williams found U-304 on the surface and destroyed it in a classic attack.

The encounters in mid-May had resulted a heavy defeat for the U-boats, and on the 21st Dönitz recalled the survivors after 41 of his submarines had been lost. Although the Battle of the Atlantic would continue with painful losses until the last day of the war, this period marked the end of the beginning of a victory in which the VLR Liberators were key. By VE-Day, No 120 Squadron was credited with sinking 14 U-boats, sharing the sinking of three more and damaging at least 10 others.

An idea of the exceptional nature of this record was that when RAF squadrons began being awarded their standards — equivalent to regimental colours — in the early 1950s it was decided these should be earned in two ways: by completing 25 years of service or to have earned the sovereign's special appreciation. Just two units have qualified by the latter means: No 617 Squadron and No 120 Squadron.



RIGHT: Liberator I AM916/OH-L is fully equipped for the long-range anti-submarine role with ASV radar aerials and the under-fuselage 20mm cannon pack. VIA J. D. OUGHTON

COMBATING THE CONDOR MENACE

Convoy OG76/HG76, October-December 1941

WORDS: MATTHEW WILLIS

It was not a vast battle between massed forces of major air arms, but a small clash between a handful of aircraft from two somewhat neglected corners of their respective operators. And yet the brief tussle in the skies above convoys OG76 and HG76 lays claim to being one of the most significant turning-points of the air war. It changed the course of the vital Battle of the Atlantic, neutralised a worrying threat to Britain's supply lines, and gave vital, early proof of concept of an important weapon in the Allied armoury.

Today, it is difficult to comprehend the extent to which

RIGHT: Fleet Air Arm Martlets taking off from an escort carrier. VIA MATTHEW WILLIS

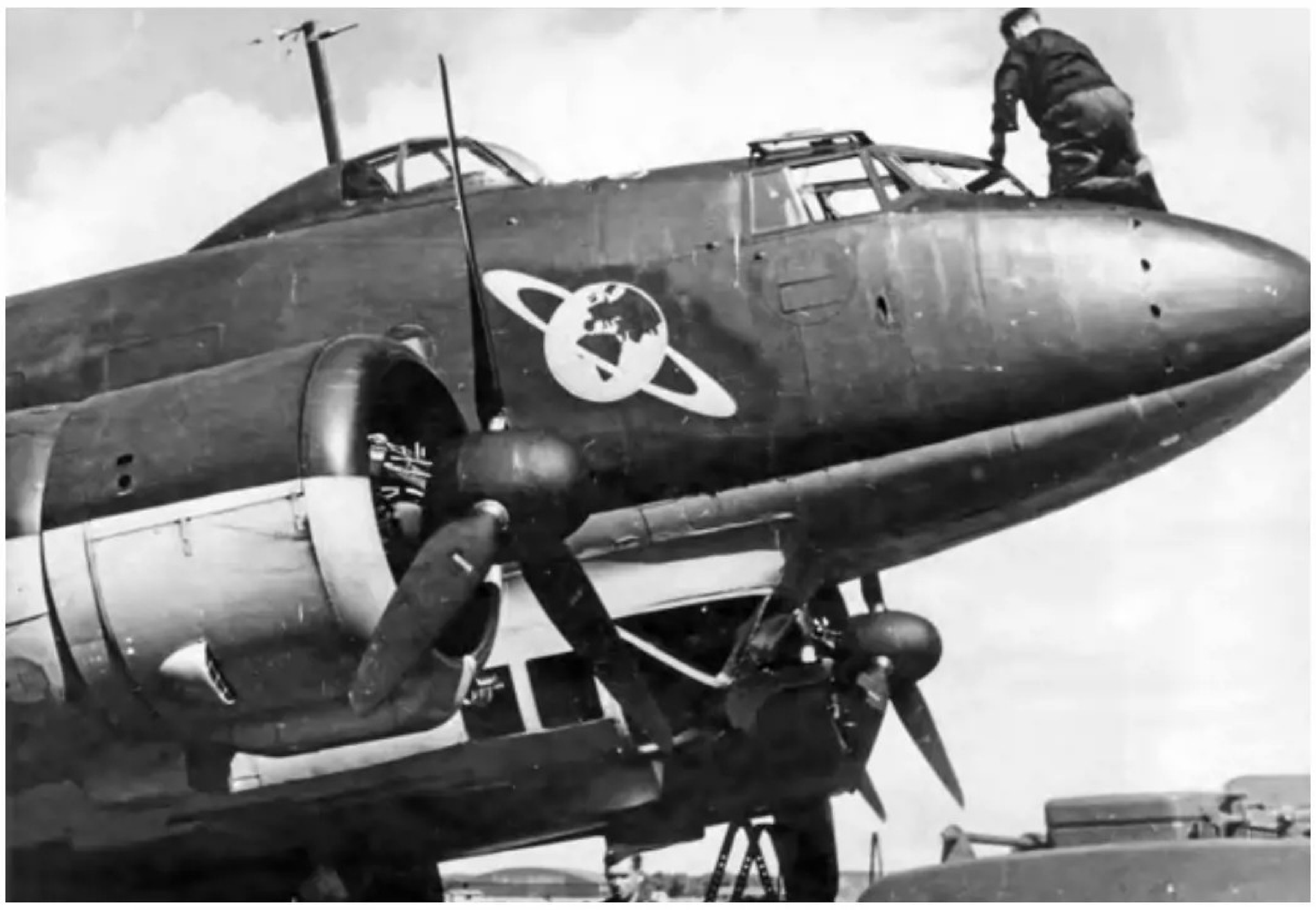
Focke-Wulf Fw 200 maritime patrol bombers, operated by the Luftwaffe and briefly under the operational control of the Kriegsmarine, represented an existential threat to the UK's supply lines in late 1940 and early 1941. Most commentators regard the Fw 200 in a similar vein to the Junkers Ju 87 'Stuka' — initially feared but with feet of clay, and straightforward to neutralise. In fact, it took immense resources, considerable resolve, and a great leap of imagination.

Contrary to popular belief — and many published sources — Winston Churchill appears not to have dubbed the Fw 200 "the scourge of the Atlantic". The closest he came was after the war, when he wrote, "To the U-boat scourge was added air attack far out on the ocean by long-range aircraft. Of these, the Focke-Wulf 200, known as the Condor, was most formidable."

> ***"The British authorities began reaching for wild solutions"***

The first months of 1941 were startlingly successful for the Condors of I./Kampfgeschwader 40. Most famously, an attack on convoy HG53 in strength led to the sinking of five merchant ships on a single day. During the evening of 8 February, I./KG 40 received a report from U-37 indicating a 21-ship convoy from Gibraltar was in range of its aircraft. Five aircraft took off the following morning under the leadership of Hptm Fliegel, the flight including Ltn Jope who had fatally damaged the *Empress of Britain* the previous October.

U-37 tracked the convoy and sent homing signals for the aircraft. At around noon, after six hours of flight, the Condors sighted the convoy and immediately went into the attack. Each pilot picked a target while the escorts "Engaged with any gun that would bear", according to the Royal Navy report. The Condor crews were not deterred and took their time. Some were even able to save bombs and attack more than one ship.



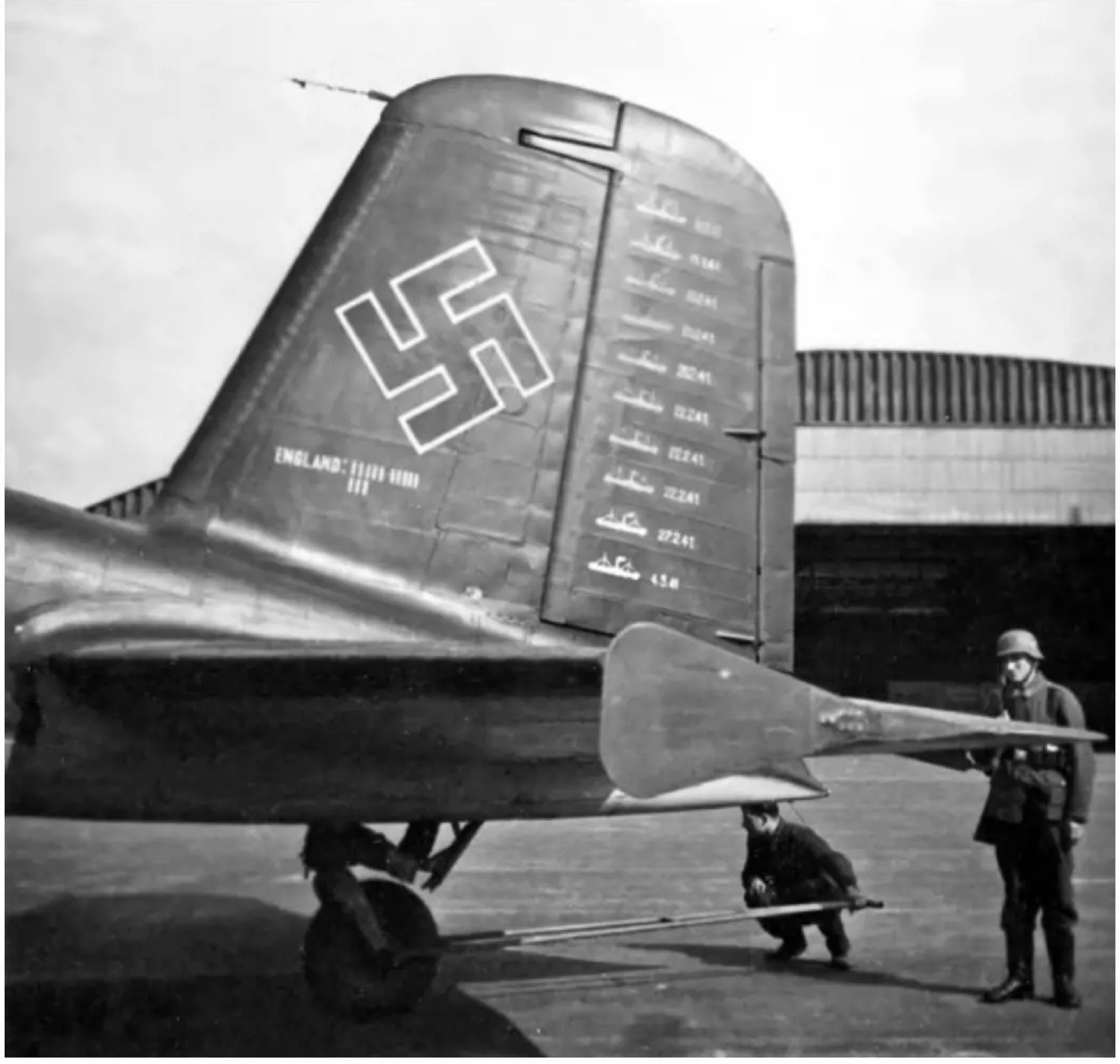
LEFT: An Fw 200 C-1 with the KG 40 'world in a ring' emblem at Bordeaux-Mérignac in 1940. VIA MATTHEW WILLIS

Four ships were sunk outright, and another succumbed in rough seas a week later. Further successes would be added before the month was out when Jope encountered convoy OB287, sank two merchantman and damaged another.

Also in February 1941, the Condor demonstrated its usefulness with different tactics, contributing to attacks on convoy OB288 which sank 12 ships; the Condors did not sink any directly, but located the convoy and directed eight submarines to its position. It proved how destructive the combination of Fw 200 reconnaissance and U-boats could be.

So impotent were British forces in the face of this threat that the authorities began reaching for wild solutions. A meeting at the Admiralty in mid-December 1940 gathered a range of experts. They mulled proposals such as 'seadromes', floating air stations in the mid-Atlantic, and the 'Woolworth Scheme' of disposable wooden undercarriageless fighters catapulted from merchantmen. One suggestion by a naval officer was to replace the superstructure of a merchant ship with a simple flight deck to turn it into an 'auxiliary aircraft carrier'.

The meeting broke without agreement on the best way



LEFT: The tail of Fw 200 F8+AL of KG 40 showing 10 credited merchant ship sinkings between December 1940 and May 1941, the 'happy time' of the Condor. This aircraft was flown several times by Ltn Bernhard Jope, one of the most successful Fw 200 pilots. VIA MATTHEW WILLIS

ABOVE: Martlet I AL257 was from the batch taken over from French orders in 1940. Several aircraft from this batch were aboard HMS *Audacity* with 802 Squadron during OG76/ HG76 and were lost when the carrier sank. KEY COLLECTION

forward but a promise to examine some of the more promising suggestions further. In view of the reputation of British naval bureaucracy, the speed with which the auxiliary aircraft carrier advanced is nothing short of miraculous. A captured German merchant ship was handed to the Blyth shipyard in January 1941 for conversion and commissioned in June, initially as HMS *Empire Audacity*, later simply *Audacity*. Her aviation facilities were basic, with no hangar and aircraft simply to be stored on deck, and the complement was six Grumman Martlet fighters of 802 Naval Air Squadron.

Audacity's first operation was OG74 — outward-bound Gibraltar convoy number 74 — in September 1941. The initial encounter with a Condor came on 21 September when the rescue ship *Walmer Castle* and tug *Thames* recovered survivors from ships torpedoed in the night. Ltn Schaffraneck bombed *Walmer Castle*, inflicting fatal damage. *Audacity* launched Sub-Lts Patterson and Fletcher, who attacked as Schaffraneck was attempting to bomb the *Thames*. The Condor broke up and all the crew perished.

The convoy arrived at Gibraltar on 27 September, and *Audacity* returned with convoy HG74. With Red section was the then-Sub-Lt Eric Brown, known as 'Winkle'. Mid-way home, *Audacity* switched to outward-bound convoy OG76.

It was not long before the Condors arrived. The lead officer of the escort force wrote, "Soon after 1100 two Focke-Wulfs arrived in the vicinity of the Convoy. The first one was soon set on fire and shot down by two fighters. In his report the Senior Pilot states — 'Hot return fire from the Focke-Wulf destroyed the pilot's hood, passing through where his neck should have been, fortunately he had got his neck near his boots just in time!'"

The pilot who had narrowly escaped was Brown. He recalled,

> ***"The Fw 200 would never represent the same threat again"***

"Red Section was boring its way up to a large four-engined aircraft which was already firing. We were still well out of range. Suddenly my little side windscreen shattered and I felt a searing pain in my mouth and tasted blood."

Two Condors were destroyed on the outbound convoy. The return convoy, HG76, proved even more dramatic. The Admiralty's Anti-Submarine Warfare Division recorded that on 18 December, "During the forenoon two Focke-Wulfs were engaged by aircraft from *Audacity*, but unfortunately guns in both the fighters jammed. Although both Focke-Wulfs got away, one of them is believed to have been damaged". The Fw 200s of Jope, now promoted to Hauptmann, and Oberlt Heindl did indeed escape, to confirm the convoy had a miniature aircraft carrier with it.

Another Fw 200 appeared at about 16.00, and was shot down by Red section, "By means of a combined quarter and head on attack". HMS *Stork* confirmed, "The aircraft presently returned leaving a very dead Wulf."

It was to be *Audacity*'s last hurrah. On the night of the 21st she was torpedoed by U-751, having become a priority target. The concept of the auxiliary carrier had been thoroughly proved, though. More were ordered, and quickly became a vital and versatile tool in the RN's armoury. The Fw 200, meanwhile, would never represent the same threat again.

The battle for convoys OG76/ HG76 represented a turning point in the air war that may have had effects out of all proportion to its scale. The Battle of the Atlantic was the pivotal engagement of the western war, and its loss would have seen other theatres fall like dominoes. HMS *Audacity*'s Martlets turning the tables on KG 40's Fw 200s at a critical moment could just have altered the entire course of hostilities.

PROTECT AND SURVIVE

VIII Fighter Command escort fighters come of age, 30 July 1943

WORDS: THOMAS McKELVEY CLEAVER

After losing three of the four P-38 Lightning groups planned as the escort force for VIII Bomber Command to the North African invasion in the autumn of 1942, and then surrendering the aircraft of the fourth group as replacements in North Africa during February 1943, VIII Fighter Command re-equipped with the P-47 Thunderbolt, originally developed as a short-range, high-altitude interceptor.

Escort missions by the three P-47 groups began in late April 1943. The Thunderbolt was so short-ranged it had difficulty flying from East Anglian bases to the Dutch coast, let alone further inland. With careful fuel management, the type's range was extended in May 1943 to the middle of the Netherlands. Deep-penetration missions into Germany itself were impossible, the bombers forced to defend themselves against Luftwaffe fighters. The concept of the 'self-defending bomber' as epitomised by the B-17 Flying Fortress was soon proven to be little more than a fantasy. Something had to be done to give the P-47 the 'legs' it needed to be a successful escort fighter.

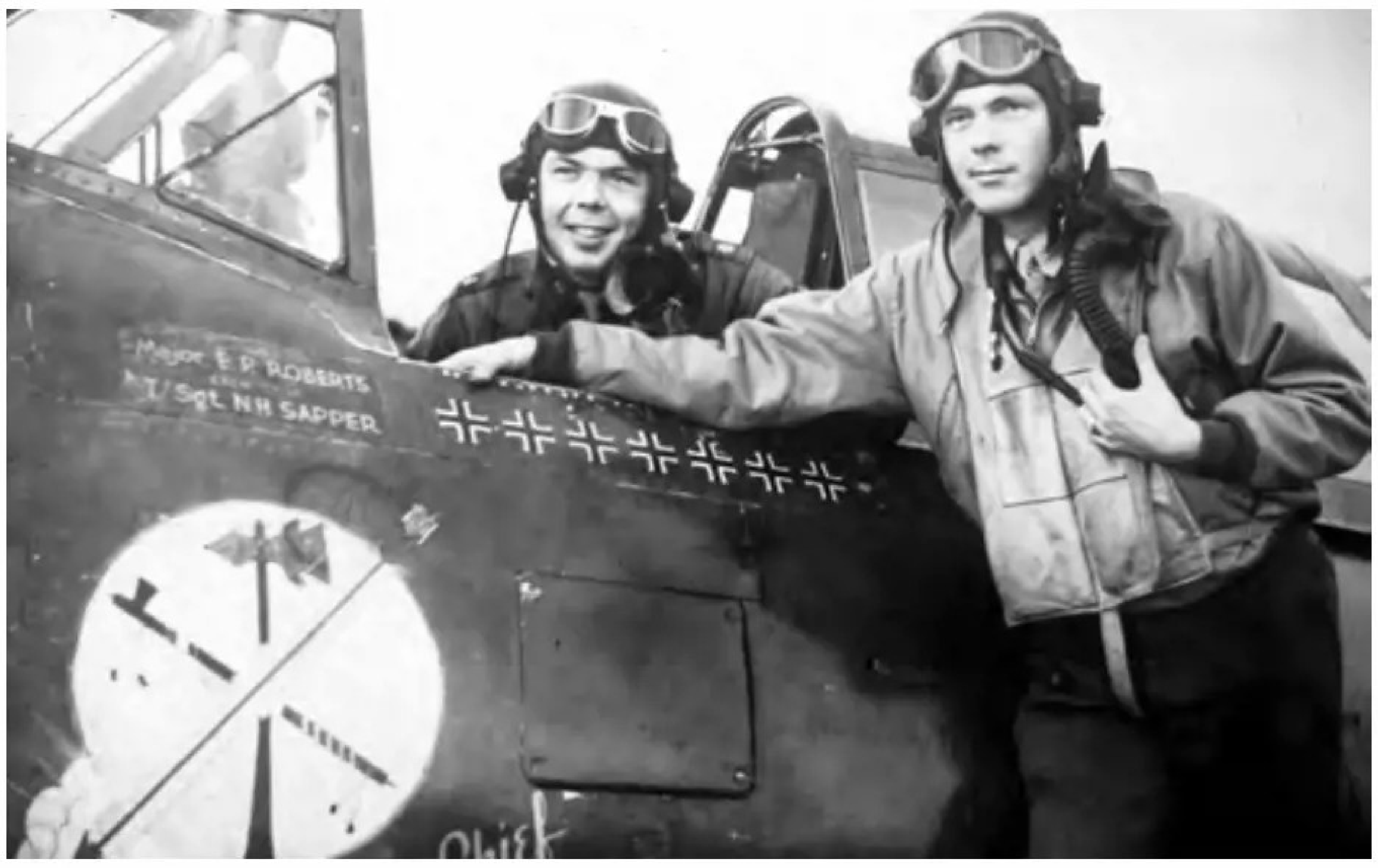
Back in the United States, Republic Aircraft began design work on adding the necessary plumbing in the Thunderbolt's lower fuselage to enable it to use a 75-gallon, droppable belly tank; even with top priority, such development would take several months to produce an aeroplane in a revetment on a British airfield. The 8th Air Force was already months behind the optimistic operational schedule produced in 1942. The air force had been saved from joining RAF Bomber Command by Churchill's agreement to allow it more time, given at the Casablanca conference. But the longer it took for the bomber offensive to start showing results, the more likely it was that the decision would be revisited. Already by June 1943 it was becoming statistically impossible for a bomber crewman to survive the 25-mission tour.

ABOVE: Most of these 12 P-47Cs from the Duxford-based 78th Fighter Group have the 75-gallon auxiliary tank mounted. IWM

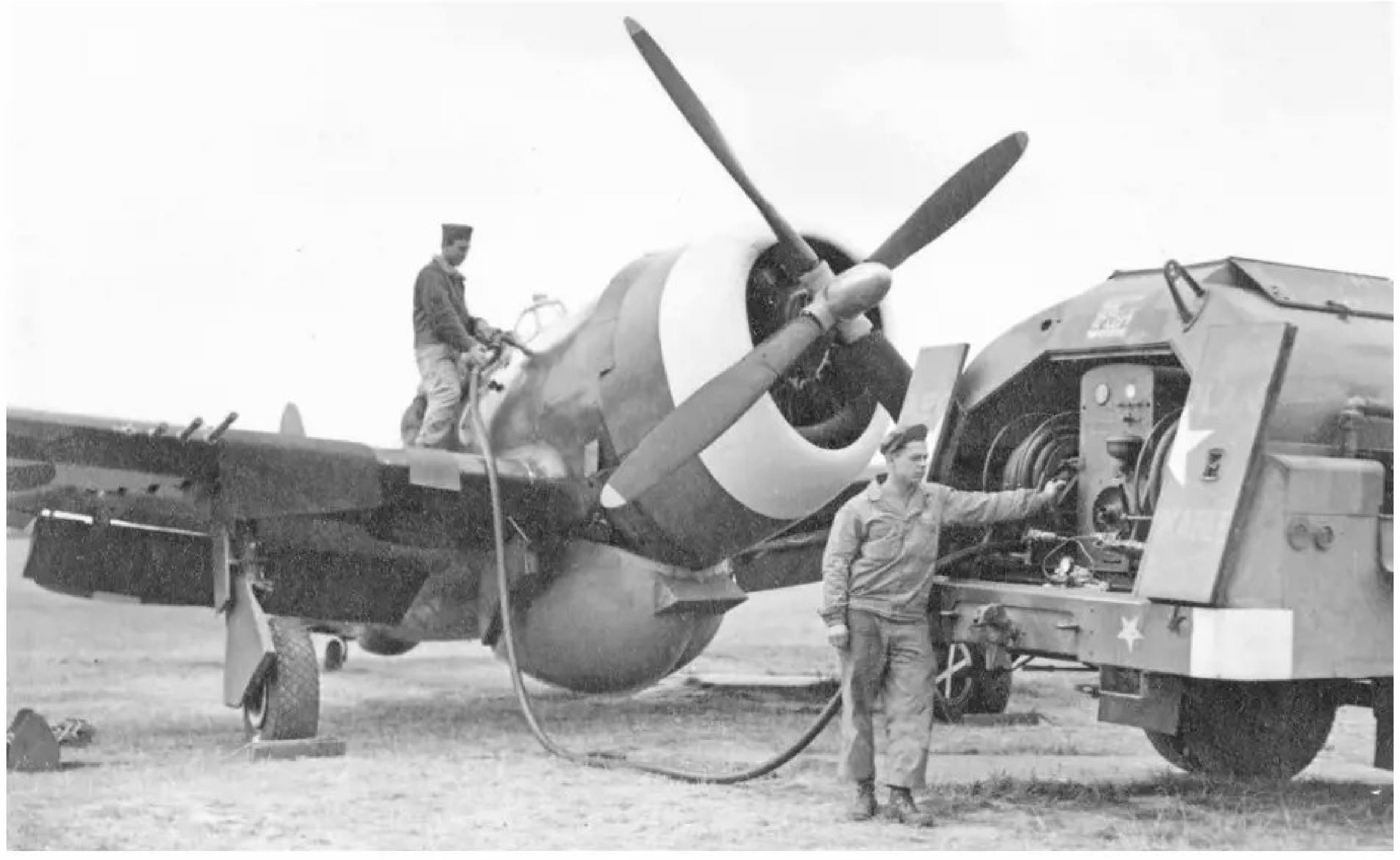
A temporary fix was provided by the use of the 200-gallon ferry tank developed for the P-47. However, the tank was unpressurised and the aircraft carrying it could not draw fuel from it above 20,000ft. When the tanks were provided to the 4th Fighter Group in early July, the necessity of crossing the enemy coast above 25,000ft meant more than half the fuel in them was unusable, with the range only extended to the German border.

On 30 July 1943, Maj Gene Roberts, commanding the 84th Fighter Squadron, led the 78th Fighter Group to rendezvous with returning bombers that had attacked the Focke-Wulf factories in Oschersleben, Warnemünde and Kassel — targets beyond the range of the P-47s. The bombers had met the forecast heavy opposition, and it was crucial the Thunderbolts get as far east as possible to provide withdrawal support as soon as possible. This was one of the final missions of the 'Little Blitz,' VIII Bomber Command's first sustained campaign. It had been flown every day since 24 July when a ridge of high pressure cleared the skies over western and central Germany for the first extended period since the effort started in April, and allowed the B-17s to fly 14 missions.

> *“It was crucial the Thunderbolts get as far east as possible”*



ABOVE: 84th Fighter Squadron CO Maj Gene Roberts in the cockpit of his P-47C; standing on the wing is Capt Charles London. IWM



ABOVE RIGHT: This 78th FG Thunderbolt carries a bulbous belly tank, which was not suitable for combat. IWM

Roberts levelled off at 22,000ft, the absolute highest that fuel could be drawn from the ferry tanks with the Thunderbolts in level cruise, just before approaching the Dutch coast. He hoped that by staying low, he could extend the group's range another 10-20 miles. Every mile mattered today. He didn't know he had chosen exactly the right altitude to take advantage of a strong tailwind.

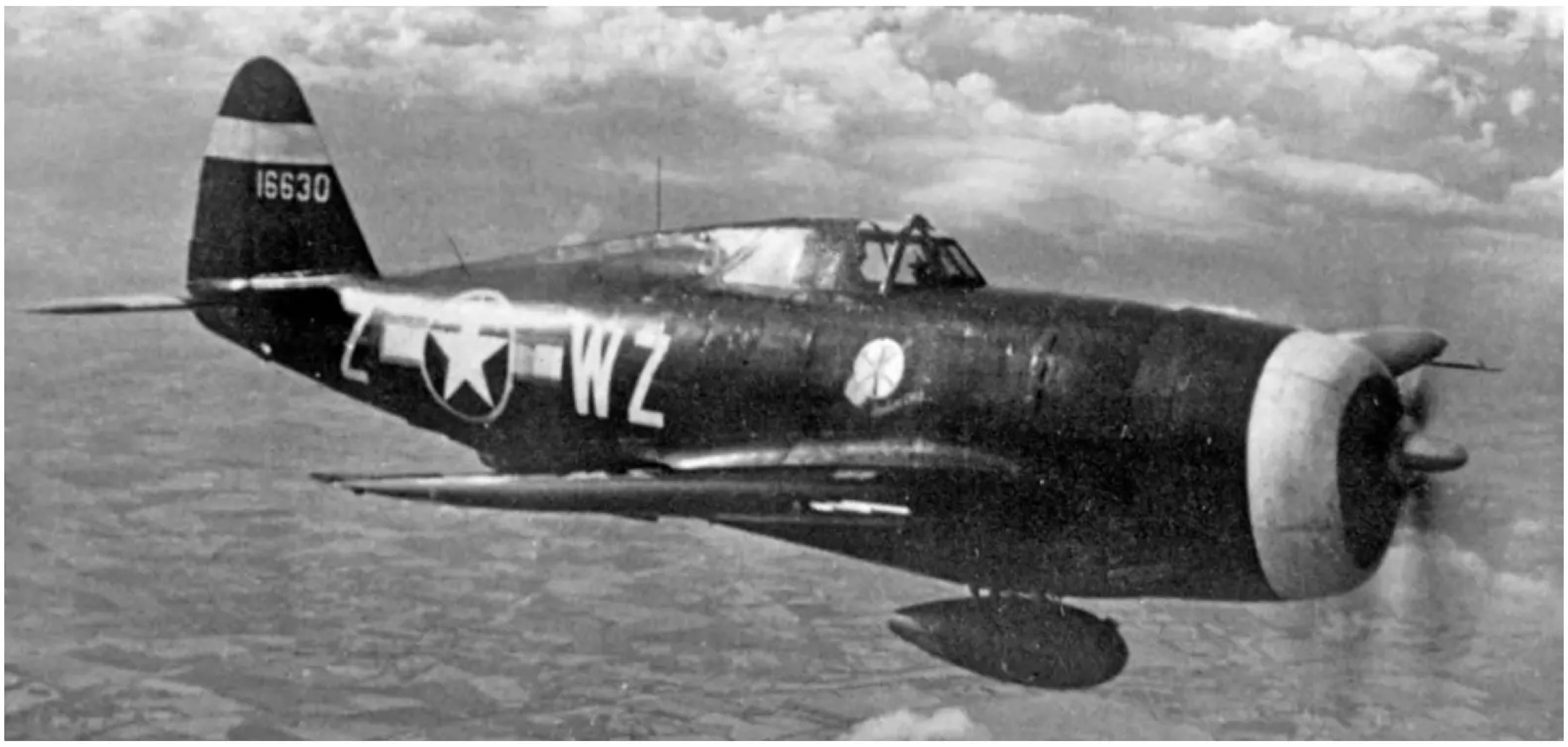
The Flying Fortresses that hit Oschersleben were able to head into the westerly wind at 22,000ft for their bomb runs, thankful the wind allowed them to continue straight on for home. As the bombers came out of the flak field over the city, defending Bf 109s and Fw 190s slashed through the bomber boxes. Bomber gunners fired at the fighters as they streaked through the formations, cannon flashing. Three Fortresses were hit, catching fire and heading down. The sky filled with blossoming parachutes. A B-17 in the lead box took hits in an engine and dropped below, out of formation. The bombers neared Haltern, where rocket-armed Bf 110 Gs attacked from the rear, firing their missiles outside the range of defensive fire.

At that moment, the 78th FG arrived on the scene. Roberts later recalled, "We were outnumbered by at least three-to-one odds but were able to maneuver into attacking position with very little difficulty. The main reason for this success was that the Germans didn't believe we could possibly show up that far inland and were not expecting to see a defensive force at all."

The Germans were very surprised by the appearance of 40 Thunderbolts nearly 100 miles inside the German border. Over the next 10 minutes, Gene Roberts scored three victories — the first 'triple' in VIII Fighter Command. Victory number three involved a harrowing chase through the bomber formation, whose gunners made no differentiation between friend and foe.

Everyone else was equally busy. Group top-scorer — with three — Charles London caught two Fw 190s at 26,000ft, flaming the leader, then zooming up to 28,000ft where he spotted a Bf 109 and hit it in its engine. With this victory, London was the first VIII Fighter Command ace to score all five victories in the P-47. Quince Brown got two, as did Jack Price. Three others scored one each. Suddenly the sky was clear of enemy fighters. For a cost of seven P-47s lost, the 78th was credited with 16 victories. Added to the eight credited to the 56th and 4th FGs, VIII Fighter Command's total score to date was doubled. The cost in bombers was 22 out of 180. No more bombers were lost once the 78th entered the fight.

For the first time, American fighters found and attacked superior enemy fighter forces over Germany, scored heavily with minimal losses, and protected the bombers. It was the sign of things to come.



RIGHT: P-47C 41-6630 *Spokane Chief* was the mount of Maj Gene Roberts. USAF

MASTER CLASS

The Peenemünde raid and the birth of the master bomber, 17-18 August 1943

WORDS: SEAN FEAST

LEFT: Pioneer master bomber Wg Cdr John Searby with his two flight commanders, Sqn Ldr Richard Manton and Sqn Ldr Shaw.
VIA SEAN FEAST

It was the Butt report in 1942 that finally brought into sharp relief the inadequacy of RAF Bomber Command and the failure of its efforts in the first two years of war. While undoubtedly brave crews had flown out night after night over enemy territory and sworn blind they had hit their intended target, intelligence suggested otherwise. Spectacularly so.

David Bensusan-Butt, who worked for Churchill's scientific advisor Lord Cherwell, analysed 100 raids in 1941. He found only one in three RAF aircraft were dropping their bombs within three miles of the target, and over the Ruhr — where visibility was far reduced by industrial haze — that figure could be as low as one in 15.

The report was the catalyst that ultimately gave birth to the Pathfinder Force (PFF), a dedicated target-finding and marking group — known as No 8 Group from 1943 — tasked with leading every Main Force attack. PFF did not get off to an auspicious start. Its opening attack was a disaster. Untried men using untried tactics, operating different types of aircraft and with few or no navigational aids to help them were bound to fail. It is odd, though not out of character, that Harris, the Bomber Command chief, thought it would be anything else. It took time, training, and some trial and error to perfect their technique, which included whether or not an attack would benefit from having a 'master of ceremonies' to control key aspects of a raid: the accuracy of the initial marking and bombing; the time-on-target for each successive wave of bombers over the objective; and whether the target needed to be re-marked at any stage to ensure the bombs continued to fall as close to the aiming point as possible.

Who came up with the idea of a single 'master bomber,' as he was later officially designated, is a moot point. The fact is that many had the same thought at the same time. What they all had in common was a desire to dramatically improve the accuracy of the bombing. Wg Cdr Bill Anderson is said to have proposed the concept formally when he was at Bomber Command HQ, but it had been rejected. Wg Cdr 'Pat' Daniels is known to have controlled an operation to Frankfurt on 2 December 1942, a newspaper article later even describing him as 'Master Bomber No 1,' saying he was, "the first man to direct, as Master Bomber, an RAF raid on Germany."

But the man who is officially recognised as the first master bomber, for the first major raid on which the technique was tried in earnest, was Wg Cdr John Searby, and the raid was on the rocket research establishment at Peenemünde.

The full story of Operation 'Hydra,' the attack on Peenemünde during the night of 17-18 August 1943, has been told before, but in summary its stated aim was the destruction of the site to prevent — or at least seriously hamper — the enemy's ability to launch its rockets on Britain and significantly disrupt the planned invasion of Europe. Rather than one single aiming point, there were three. Each target had its own dedicated wave of bombers. Searby's role, supported by his two deputies, was to 'shift'

LEFT: Lancaster III LM446 of No 619 Squadron, one of the No 5 Group units which took part in Operation 'Hydra'.
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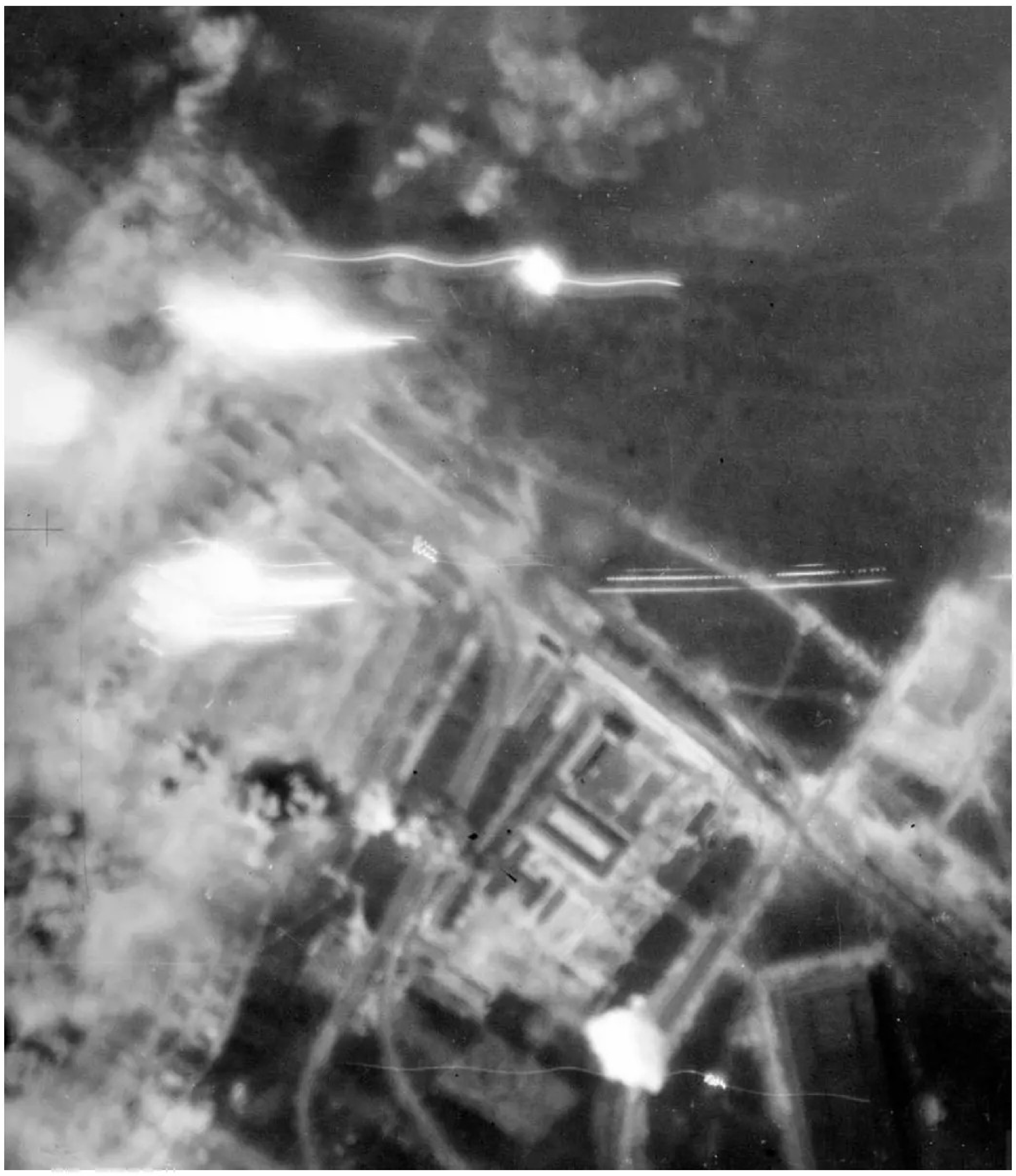

RIGHT: This vertical photograph taken from a No 102 Squadron Halifax during Operation 'Hydra' shows bombs exploding among buildings at the northern end of the Karlshagen barracks, at middle and lower left, while part of the V2 rocket production works at Peenemünde Süd is at lower right. ALAMY

the aiming points in turn to ensure maximum destruction.

The post-raid photographs showed many buildings still burning, with damage to the factories and housing for personnel described as "extremely severe". In the northern manufacturing area — aiming point 'E' — 27 buildings of medium size, including the senior officers' mess, were destroyed and nine others, among them some of the largest and most important, were badly damaged. At aiming point 'B', another large building was partly demolished by two direct hits, and another by blast. Many hits were recorded on the railway and railway stock. In the living and sleeping quarters at aiming point 'F', 40 huts were flattened and a further 50 gutted by fire, as well as three large barrack blocks blown apart by high explosives. In the labour camp to the south, at least 23 of the 45 large huts were destroyed and others damaged.

Contemporary reports suggested the raid was a complete success, or at least as successful as the planners had dared hope. Losses, though high, had been lighter than expected and the C-in-C did not have to order the bomber boys to go back, as he had threatened to do. Harris, however, was a realist; he said later there was never any chance of putting a total stop to the Germans' rocket programme. The best that could be achieved was a partial delay: "A single attack could only cause delay for a month or two", he wrote. "But in the war of the V weapons, time was everything, and every delay we could cause the enemy, however brief, was thoroughly worthwhile."

In *The Strategic Air Offensive against Germany 1939-1945*, Sir Charles Webster and Noble Frankland argue that the attack on Peenemünde, "did considerable damage but was hardly so successful as was thought to be the case in London". From the German perspective, Gen Dornberger estimated the delay caused to development of the rockets as no greater than four to six weeks. Common sense suggests the transfer of rocket production to the Harz Mountains, and the shift of rocket testing to a new establishment in Poland, must have taken precious time and resources when both were in short supply. The deaths of two important rocket scientists, too, surely had some impact.

But its significance in the annals of the 1939-45 European air war is not predicated on the total success or otherwise of the attack; rather, in the methods and tactics deployed to achieve the destruction it caused.

Peenemünde was the proving ground for the master bomber technique. It vindicated those who had advocated the benefit of having a single, controlling voice to optimise a Main Force raid. It showed how even large formations and multiple waves of aircraft — almost 600 were involved in this attack — could be shepherded through a target in the shortest amount of time possible, which ensured a higher concentration of bombs on the target and allowed the bombers to be exposed to enemy flak or fighters for no longer than was entirely necessary. It created a level of 'shock and awe', in today's parlance, that had previously been unknown on such a scale.

It is difficult to imagine how a target with three aiming points could have been attacked without the level of control afforded by a master bomber. A year later, when Allied forces were looking to break out of Normandy, the ability to attack multiple aiming points — often in very close proximity to friendly troops — with accuracy and precision played a key role in enabling a successful break-out and advance. It also optimised the use of bombs at a time when supplies were alarmingly low.

Whether contemporary military figures or post-war historians can agree on the ultimate 'success' of the Peenemünde raid is probably not important. The rockets did come, but later than intended and without the levels of destruction envisaged. What everyone is agreed on is the brilliance of the master bomber, Searby, and the bravery of the men under his command. After further experimentation and refinement, from the spring of 1944 the role of the master bomber became a permanent feature in Bomber Command's planning of every Main Force raid. Such was its success that the technique was subsequently replicated in other theatres of war to improve bombing accuracy.

FOCKE-WULF
IV. JG3

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On course for catastrophe

Why did the Luftwaffe fail to change the course of the Eastern Front air war to its advantage as the end of World War Two neared?

WORDS: DAN ZAMANSKY

Groundcrew tend to a Ju 87 Stuka of I./Schlachtgruppe 5 on the Eastern Front during the winter of 1943-44. VIA CHRIS GOSS

ABOVE: **P-400 Airacobra BX237, in service with the 19. GvIAP (Guards Fighter Aviation Regiment), was delivered from Britain to the Soviet Union in May 1942. This aircraft was flown by Capt Konstantin Fomchenkov, who was later killed in action on 24 February 1944.** VIA ANDREW THOMAS

The essential factor affecting the Luftwaffe on every front in 1945, including the Eastern Front, was the collapse of German strategy. Between 22 August 1939, when Hitler decided to attack Poland, leading to the outbreak of the Second World War, and 25 June 1943, when he made the final decision to strike superior Soviet forces in the Kursk bulge, he committed every possible strategic mistake. In the year-and-a-half until the beginning of 1945, the military power of Germany and its ever-smaller group of remaining allies and satellite states collapsed.

Today, with the 80th anniversary of the end of the war fast approaching, it is still little understood that even on the Eastern Front and even in 1945, it was Anglo-American industrial power that decided the outcome of the war. The USSR received the gigantic total of 16.3 million tonnes of non-military goods from the Allies during the Second World War, via the Lend-Lease programme. This mountain of material was even greater than the total volume of Germany's wartime imports of crude oil, which amounted to 16.1 million tonnes. Any serious historian accepts Germany could not have even attempted to wage the war without imported oil, yet the significance of Lend-Lease for the Soviet Union's war effort is not clearly appreciated. It received a vast variety of goods, everything from foodstuffs to field telephones, machine tools and war factories. These supplies were nothing less than the central pillar of the Soviet war economy.

In the air, the Soviet forces would not have been able to fight at all had they not possessed Lend-Lease supplies. Piston-engined combat aircraft of this period used high-octane gasoline, which the USSR found extremely difficult to produce. During 1940, it made slightly more than 35,000 metric tonnes of this gasoline. Over the course of four years of Lend-Lease, the Allies supplied 1,170,000 metric tonnes of high-octane gasoline

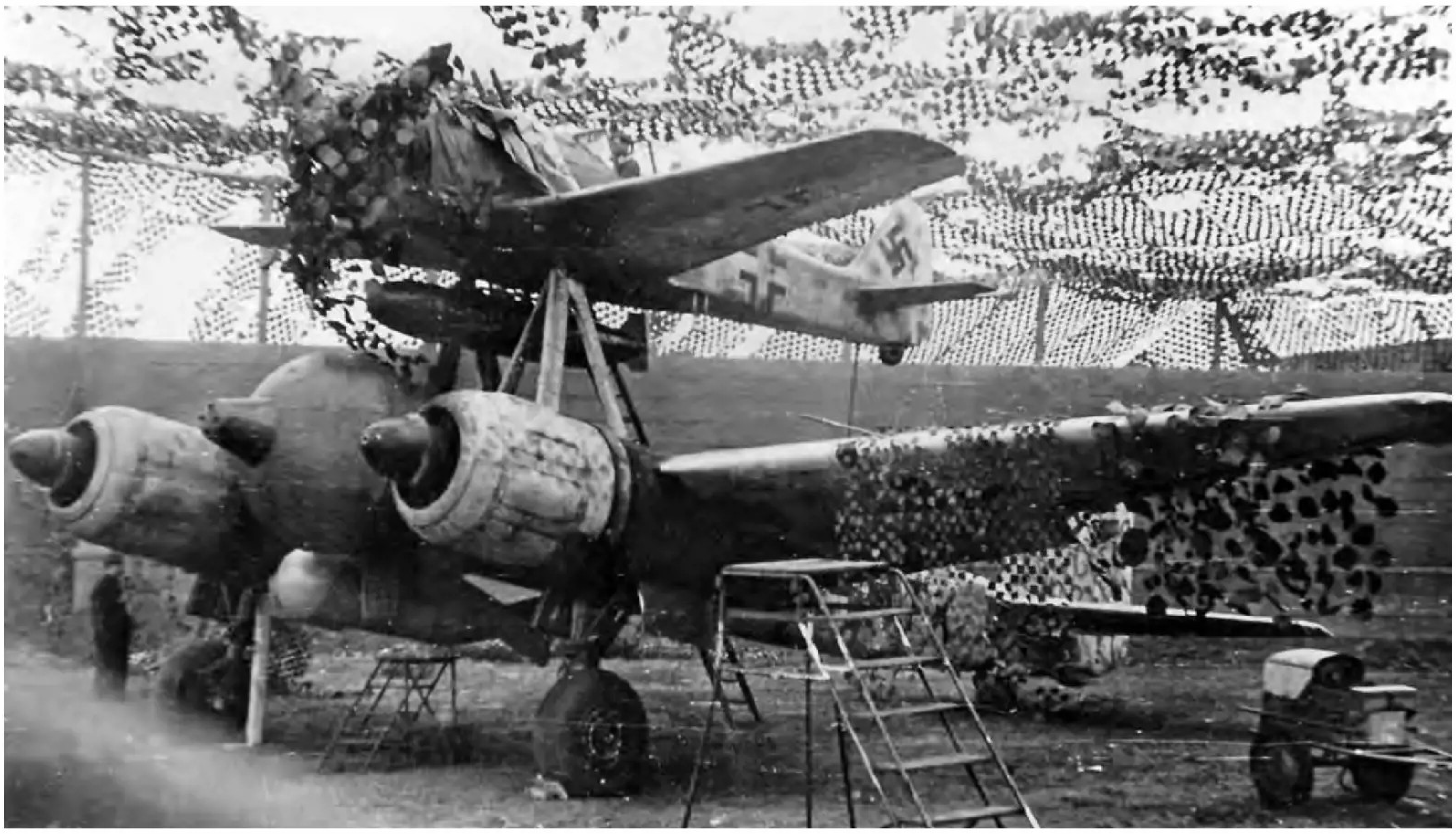
LEFT: **A Ju 87 G-1 fitted with two 37mm cannon for anti-tank missions. Employment of bomber 'Stukas' at night might have made a difference in the theatre, given the lack of night fighter opposition.** VIA CHRIS GOSS and its component fractions, and the modern industrial equipment the USSR needed to begin its own mass production of such gasoline. The Allies also supplied 4,642 tonnes of tetraethyllead (TEL), the essential additive required to convert standard gasoline into aviation gasoline, at a rate of a mere 3.3 grams per kilo in the Soviet case. In 1945, the Luftwaffe was fighting aircraft using Allied fuel on all fronts, including the Eastern Front.

> ***"Without Allied aid, there would have been no Eastern Front in 1945"***

In many cases, of course, the aircraft used by the Soviet air forces came from Allied supplies. On 1 January 1945, the USSR had 13,187 aeroplanes on the Eastern Front. Of these, 1,190 — or more than 11 per cent of the total — were Douglas A-20 Boston light bombers and Bell P-39 Airacobra fighters delivered from the United States. The long-range bomber force had an additional 1,355 aircraft, of which 307, almost a quarter, were North American B-25 Mitchell medium bombers. The importance of these machines was even greater than that suggested by numbers alone. Almost all Soviet aircraft, apart from bombers, were of mixed wood-and-metal construction because the USSR had another acute resource deficit, that of aluminium. Production of aircraft radios was another problem.

Allied aircraft, which were of all-metal construction and equipped with modern radios, were the most combat-capable among those available to the Soviets, even though they were obsolete compared to those used on a large scale by the Allies themselves. The Airacobra was the outstanding example of this. It was no longer in use by US forces

RIGHT: The career of leading 'Stuka' exponent Oberst Hans-Ulrich Rudel nearly came to an end on the Eastern Front.
VIA CHRIS GOSS



RIGHT: A Ju 88 G/Fw 190 Mistel 2 combination, probably of II./KG (J) 30 at Oranienburg, north of Berlin, in March 1945. Both carry auxiliary fuel tanks.
VIA CHRIS GOSS

Fw 190s drawn from JG 3 were involved in last-ditch suicide missions against the Oder bridges. VIA CHRIS GOSS

anywhere in Europe. The Italian Co-Belligerent Air Force flew it in small numbers, exclusively as a ground attack platform. In Soviet service, the P-39 was an essential air superiority fighter. In the final weeks of the war, the 6th Guards Fighter Corps, which was equipped with more than 300 Airacobras, was given the mission of achieving air superiority above the tank armies of Marshal Ivan Konev, advancing on Berlin from the south-east. These Airacobras, and all the other war materiel the Soviet Union received from the Allies, amounted to less than 10 per cent of the total — enormous — quantity of Allied aid. Without it, there would not have been an Eastern Front in 1945.

As significant as were the problems caused for Germany by Allied aid to the USSR, they were not the main difficulty. During the first days of 1945, even in the land war, the Eastern Front was in the background. Over November-December 1944, Germany sent 2,297 tanks and assault guns to armies fighting the western Allies. Only 919 went to the east. In the same period, the German Luftflotten (air fleets) on the Eastern Front received 697 aircraft, while others received 3,613 — more than five times more.

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Preparations for and execution of the German Ardennes offensive in late December 1944, an attack on the Allies with no chance of success, denuded the Eastern Front of essential resources, even as the German army in the east balanced on the edge of a precipice. This formed part of a long-established pattern. Hitler spent much of his political career talking of the threat of the Bolsheviks, yet for a large part of the war fighting the USSR was a secondary priority.

The inability to set clear aims and act effectively to address them — which even in the 21st century besets the defence ministries and industries of European countries — was the plague not just of German wartime policy, but of its aircraft industry. The Soviet Union had no jet or rocket fighters in 1945. The Luftwaffe, on the other hand, had a rocket fighter, the Messerschmitt Me 163, and a jet fighter, the Me 262, which was also used as a Jabo (fighter-bomber). Finally, it had a jet bomber, the Arado Ar 234.

The Me 262 alone could have affected the course of the war, but the division of resources between too many programmes meant it was never available in significant quantities. Worse, it was not used in the east until just before the war ended. Every single advanced aircraft type Germany managed to produce was deployed to the west as a priority. The effect of this nonsensical policy was that the Luftwaffe was making the greatest possible effort to delay the Anglo-American advance eastwards, even while the Red Army was nearing Berlin.

The final impediment to any attempt at the coherent conduct of the air war in the east was perhaps the worst of all. There was far too little fuel available. During the second half of 1944, Allied air attacks had almost destroyed German production of aviation fuel. Over that period, Germany produced less aviation fuel than in the single month of May. As a direct consequence, Luftflotte 6, which covered the entire central sector of the Eastern Front, had only 4,807 cubic metres (3,633 metric tonnes) of fuel on 6 January 1945. As the Luftflotte hierarchy explained, this meant it could "conduct a large-scale battle for about three days with the available forces". After that, there would be no more fuel left.

Even on the eve of the great Soviet offensive in Poland, on 11 January, Luftflotte 6 gave directions to the units under its command saying that, "initially, one sortie per ground attack group is authorised, further operations only after approval". It is not surprising that the next day, the Luftwaffe reported, "[The Red Army] succeeded in punching through to a depth of up to 15 kilometres in certain sectors". This was a careful, restrained way of admitting the front had disintegrated. On 13 January, Luftflotte 6 flew just 268 sorties, even though it possessed 1,063 aircraft, 781 of them serviceable.

Facing such weak resistance, the Red Army reached the Oder, the final river barrier between the USSR and Berlin, and established the first bridgeheads on its western bank. The situation was desperate, and it led to bad decisions. On 1 February, 60 twin-engine night fighters, including the newest Junkers Ju 88 G-6s with Jumo 213 engines, were sent to conduct a daylight ground attack operation to impede the Soviet advance.

This was an incredible waste of scarce resources. The entire Soviet air force had significantly fewer than 60 night

AN ARMAMENTS MIRACLE

Lend-Lease deliveries to the USSR (tonnes)

Year	All goods	Of these: military goods	Percentage of military goods
1941	366,567.5	26,200	7
1942	2,492,461.8	200,300	8
1943	4,871,483.1	447,200	9
1944	6,317,396.2	533,800	8
1945	3,732,772.9	309,500	8
Totals	17,780,681.5	1,517,000	9

Calculated from statistics of the People's Commissariat of Foreign Trade (NKVT), published by the Russian Central Air Force Museum, Monino

RIGHT: Limited fighter-bomber operations by Fw 190 D-9s were much too little, too late. VIA CHRIS GOSS

fighters, and they were much less sophisticated than the aircraft the Luftwaffe threw into battle that day. Instead of shooting down hundreds of technically inferior Soviet aircraft at night — which these aircraft were capable of, if used for their intended purpose over the course of months — they lost 10 of their number on this one day to Soviet anti-aircraft fire, without achieving anything worthwhile.

More effective measures would have to be taken to prevent the immediate annihilation of Germany's remaining forces. These were already under way on 21 January when Oberst Hans-Ulrich Rudel, the most experienced and highly decorated ground attack pilot in history, was made the commander of a task force "by order of the Reichsmarschall" and given command of all ground attack units in the southern sector of the combat zone of Luftflotte 6. On 8 February, Rudel himself led four attacks on Soviet troops near Lebus, north of Frankfurt an der Oder. Three months before the war ended, Rudel was still flying the obsolete 'Stuka'. As he acknowledged, "reaching an altitude of 800 metres in the Ju 87 took too long, far too long."

On the one hand, Rudel was lucky. The Soviet 16th Air Army was largely prevented from flying that day by bad weather around its airfields and its effort was limited to 146 sorties, none of which encountered 'Stukas'. The short range of Soviet fighters saved the Luftwaffe on that occasion. Even the Airacobra, the sole Soviet front-line fighter which flew with drop tanks relatively regularly, had a combat radius of only 325km (202 miles). The P-51B Mustang, used by the Americans, could manage 1,080km (670 miles). If the Soviet air force had possessed Mustangs, they could have taken off from bases far behind the front, unaffected by bad weather, reached the Oder and shot Rudel's 'Stukas' out of the sky.

On the other hand, Rudel's fortune was rather limited. Luftflotte 6 flew 1,674 sorties on 8 February, but dropped only 299 tonnes of bombs — an average of less than 200kg (440lb) per aircraft. This was not nearly enough to suppress Soviet anti-aircraft artillery positions. As a result, 14 of its aircraft were shot down by anti-aircraft guns. Rudel's was not one of them. His Ju 87 G-2, Werknummer 494220, was merely badly damaged. But it was more than enough to almost kill him. As the daily report noted, "Colonel Rudel badly wounded, leg amputated."

> *"The Luftwaffe's commanders succumbed to ever worse ideas"*

The German forces were simply too weak, too small, and their losses too heavy. The day before Rudel's injury, another winner of the Knight's Cross, Werner Hoffman, was shot down and killed by anti-aircraft fire while flying his Focke-Wulf Fw 190 F-8. Unlike Rudel, Hoffman was not important enough to be mentioned by name in the daily report.

The vulnerability of even the Focke-Wulf to Soviet flak and fighters led the Luftwaffe to plan a decisive improvement on 17 February. This was "the relief of the Fw 190 with BMW 801 engine, no longer satisfactory in its performance also in the east [...] through modification [...] with the DB 603 or Jumo 213 engines". This meant re-equipment of the ground attack units with the newest Focke-Wulf fighter, the Ta 152. In that same month, the Luftwaffe's front-line units received precisely two Ta 152s. This was how the Nazi dictatorship was coming to an end, with planning even by military professionals reduced to impossible illusions.

The hard light of reality showed that the Luftwaffe still had 328 old 'Stukas' on the front at the end of February. The majority of these, 237, served with night ground attack units. They were useful, particularly on the Eastern Front, where the Soviets had almost no night fighters. Yet Ju 87 production had ended in September 1944, with no consideration of this operational possibility.

On the same date as the illusory Ta 152 plan was discussed, it was announced that 'Stukas' undergoing modification into night ground attack aircraft were being prioritised for the Western Front. In the east, Rudel's task force, with its commander in hospital, would have to give up Ju 87s allocated to it because they were the only possible source of additional aircraft for Nachtschlachtgruppe 8, also located in the east.

This was another extraordinary example of nonsensical planning. In the west, ‘Stukas’ suffered heavy losses even at night from the world’s two most advanced night fighter types, the American P-61 Black Widow and the British Mosquito. Neither was present on the Eastern Front, but the Luftwaffe command no longer possessed even the minimal common sense to allocate ‘Stukas’ to an operational theatre where they could be used effectively.

As the pressure of the war’s final crisis continued to rise, the Luftwaffe’s commanders succumbed to ever worse, ever less militarily effective, ideas. One was the use of Henschel Hs 293 glide bombs against bridges on the Oder. Attacks with these bombs were first observed by the Red Army on 22 and 25 February. On the first of these two days, the Soviet defenders were surprised and the bombs fell quite close to the bridges, but the effect was limited. Just small sections of the wooden bridges constructed by Soviet engineers were destroyed, because the glide bombs did not possess sufficient explosive power. Furthermore, they flew slowly enough to be hit by AA guns; in the 25 February attack, every one was damaged in flight and missed its intended target.

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A fundamental reason for the failure of the attacks was the tiny size of the bomber force. For the initial Hs 293 strike, Kampfgeschwader 200 employed only seven Heinkel He 111s and three Dornier Do 217s, each carrying just a single bomb. These suffered no losses and reported six hits, in large part because they were escorted by 26 Messerschmitt Bf 109s and 17 Fw 190s of Jagdgeschwader 11, but such an attack could change nothing in the final year of a world war.

As the final Soviet offensive drew closer, the Luftwaffe attempted ever stranger schemes to interrupt Soviet logistics. Perhaps the most ridiculous was an attack “on an auxiliary railway bridge at Warsaw” during the night of 7-8 April 1945. It was conducted with five Mistel Ju 88/Fw 190 ‘piggyback aircraft’ combinations of KG (J) 30, with 15 He 111s of II/KG 4 acting as target illuminators.

The strike failed from the very start. It was planned to hit not one but three targets, yet it was almost impossible to take off in a Mistel at night, so only one out of three flights succeeded in doing so. All five Mistel combinations which managed to get airborne were lost, two because of “damage to fuel feed systems”. This underlined how this highly unusual aircraft, with a manned fighter mounted on top of a bomber converted into a winged bomb, suffered from poor reliability. Only one of the five Fw 190s which were mounted on top of the Ju 88s returned to base. Three pilots were known to have bailed out and one, Oberfähnrich von Hermaden, went missing. He had in fact also bailed out in German territory, but so far from his own base that he had to spend four days hitch-hiking across Germany in order to return. Unsurprisingly, the Soviet air defences did not observe even a single Mistel, let alone any damage to the bridge.

Eight days later, with the Soviet Berlin offensive under way, it was time for a final manifestation of the Luftwaffe’s descent into irrationality. On 16-17 April, some pilots from II. and III./JG 3 flew so-called ‘SO missions’ — in plain language, suicide attacks — against the Oder bridges. In a mutilation of the true meaning of words, so common for the Nazi regime, this special operation was called ‘Freiheit’, meaning ‘Freedom’. There was also a ‘Freiheit’ bomb group

LEFT:
It was with the Kommando Nowotny that the Me 262 A-1 entered service in the west. Use further east in Germany, by JG 7, took longer.
VIA CHRIS GOSS

WEST BEFORE EAST

Aircraft type	Role	First appearance in the west	First appearance in the east
Ju 88 G-6	Night fighter	July 1944 (NJG 2)	January 1945 (NJG 2)
Fw 190 A-9	Day fighter	October 1944 (JG 11)	January 1945 (JG 1)
Fw 190 D-9	Day fighter	October 1944 (JG 54)	January 1945 (JG 301)
Bf 109 G-10	Day fighter	November 1944 (JG 27)	January 1945 (JG 53)
Bf 109 K-4	Day fighter	November 1944 (JG 27)	January 1945 (JG 11)
Me 163 B	Rocket fighter	July 1944 (JG 400)	Never used
Ar 234 B-2	Jet bomber and reconnaissance	August 1944 (Kdo Sommer)	May 1945 (KG 76)*
Me 262 A-2a	Jet fighter-bomber	August 1944 (KG 51)	May 1945 (KG 51)*
Me 262 A-1a	Jet fighter	October 1944 (Kdo Nowotny)	April 1945 (JG 7)*

** — used in only very limited quantities in the east* with 25 Ju 88s, formed no later than 6 April, but no suicide missions by this unit are known.

Of the fighter pilots, at least seven lost their lives in this action, one of the last demonstrations of the inhuman nature of Hitler's dictatorship. The Soviet side observed only the crash of a single fighter, reported as an Fw 190, into a bridge in the Küstrin-Göritz area on the 16th, possibly connected to the operation. Eight Red Army soldiers were killed, another 20 wounded. The bridge sustained only minor damage, underlining the fact that all the Luftwaffe's final efforts were a futile waste of human lives.

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Among the last, aimless operations flown by the Luftwaffe as part of the war in the east were those conducted by some of its newest aircraft types. Only now, when everything had been lost, were haphazard attempts made to take advantage of Germany's technological superiority over the Soviet air force. On 15 April, 43 Fw 190 D-9s from II./JG 6, the only fighter unit on the Eastern Front which was fully equipped with the high-performance, long-nose 'Dora,' conducted a bombing attack on Soviet artillery in the area between Forst and Bad Muskau, east of Cottbus. This was probably the biggest fighter-bomber strike ever flown by 'Doras.' Soviet Yak-3s made a vain attempt to intercept, and four of them were claimed shot down. However, they disrupted the German attack sufficiently to make it impossible to observe any specific results. The 'Doras' then disappeared into the chaos of the last days of the war.

At the very end of hostilities — on the day Berlin was surrounded and Germany split in two after American and Soviet forces met at Torgau on the Elbe — the Me 262 finally appeared in the east, for exactly one week. The first missions were flown on 25 April, by 21 jets in the Dresden area. Another four sorties took place the next day. Their task was ground attack, but they were so ineffective that Soviet air defences didn't even notice their presence. Konev's 1st Ukrainian Front did observe a total of 35 Me 262 sorties between 27 April and 1 May, but if their ground attacks had any effect, this remained unreported. What an anti-climax this was. An aircraft which was not just the Luftwaffe's, but the world's, most advanced fighter in 1945 was flown in driblets as a fighter-bomber against the Red Army, and made no impression.

The Luftwaffe's extraordinarily late attempt to use jets against the USSR did lead to a very small number of aerial combats and losses. It is not true that approximately 10 Me 262s were lost on the Eastern Front, as claimed in some books. Only one loss of a Luftwaffe jet to Soviet forces has in fact been definitively identified. On 30 April, Ltn Friedrich Kelb of III./KG (J) 6 was shot down and killed by a flight of Yakovlev Yak-9Us from the 107th Guards Fighter Regiment, commanded by Senior Lt Kuznetsov. The Me 262 crashed 15km (nine miles) south-east of Forst.

On the Soviet side, two losses to the Messerschmitt jets are known, identified here for the very first time, almost 80 years later. A twin-engine Petlyakov Pe-2 flown by Senior Lt Alexander Poloznikov of the 193rd Guards Reconnaissance Regiment was lost on 27 April. Two days later, Lt Nikolai Cherny of the 53rd Fighter Regiment was shot down in his Yak-9 near Weißwasser.

This was an insignificant return for the extraordinary investment Germany made in the Me 262. Under an avalanche of Allied bombs, 1,021 examples had been delivered to the Luftwaffe by 10 April, of which 232 had been lost to enemy action. This was all too little and too late for the Western Front, but it is remarkable that almost no use of the jets was made on the Eastern Front, where it would have been substantially easier for them to achieve success against a much weaker opponent.

Germany's air war in 1945 remained a war against the British and the Americans from the first day to the last. This is reflected in the final totals of aircraft losses on all fronts during the year. They can only be estimated, since so many documents were lost, but present a very clear picture nonetheless. Approximately 4,200 aircraft were lost in the west, 100 in the south and 2,000 in the east. The Luftwaffe had been fighting on the Eastern Front with both hands tied behind its back.

BELOW: These Yak-9Ds, on an aerial photography sortie around Sevastopol in the Crimea during 1944, hail from the 3rd Squadron of the 6. GvIAP, a Soviet naval air forces unit. Aircraft 'Bort 22' is flown by fighter ace Senior Lt Mikhail Grib.

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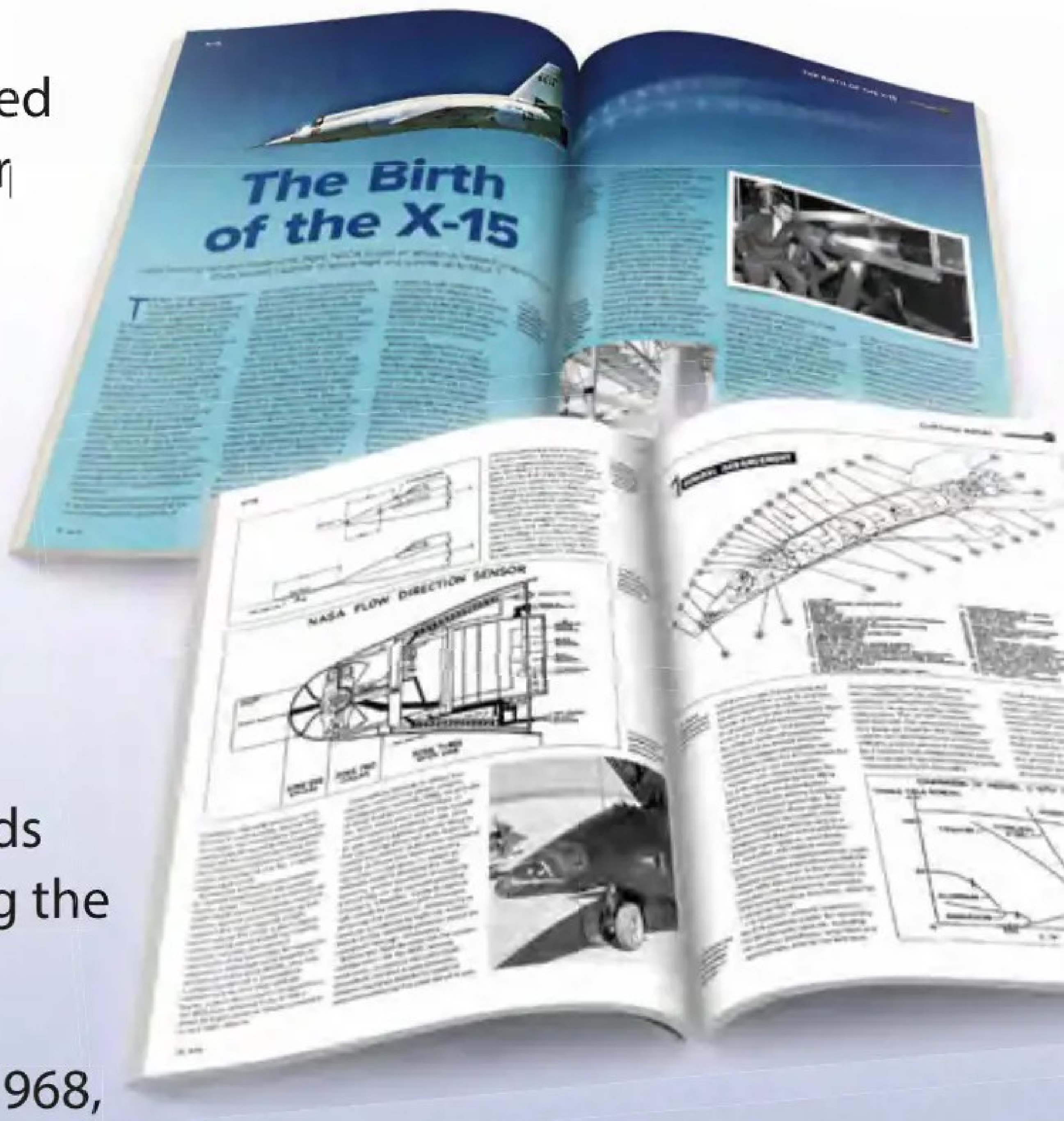
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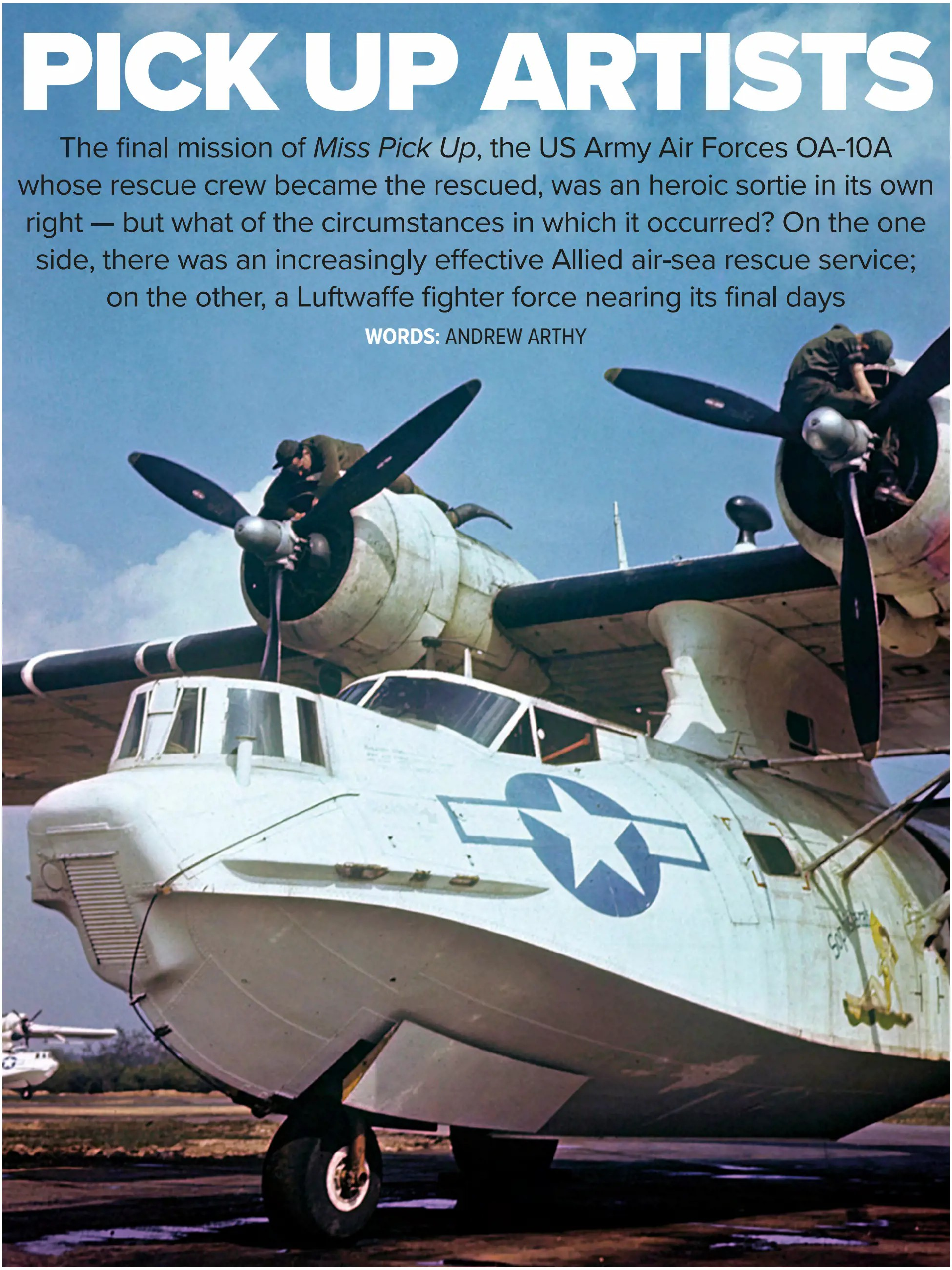
PICK UP ARTISTS

The final mission of *Miss Pick Up*, the US Army Air Forces OA-10A whose rescue crew became the rescued, was an heroic sortie in its own right — but what of the circumstances in which it occurred? On the one side, there was an increasingly effective Allied air-sea rescue service; on the other, a Luftwaffe fighter force nearing its final days

WORDS: ANDREW ARTHY



The war was going very badly for the Germans on all fronts as March 1945 drew to a close. The Soviets were preparing for their assault on Berlin in the east, while to the west the Anglo-American armies were advancing across the Rhine into central Germany. Things were no better in the skies, as the ever-strengthening Allied air forces ranged against targets around the shrinking Reich. The Luftwaffe still had a semblance of an air defence system, and Messerschmitt Me 262s were vital in protecting targets against Allied heavy and medium bombers. In fact, by this stage of the war the jets were providing almost all Germany's strategic air defence, with piston-engined aircraft focused on supporting the army.

Several Gruppen of Me 262s were based in northern Germany, including the I. Gruppe of Jagdgeschwader 7 led by Maj Erich Rudorffer, and the III. Gruppe of Jagdgeschwader 7 under Maj Rudolf Sinner. Also nearby were the former bomber pilots — now converted fighter pilots — of the Me 262-equipped I./Kampfgeschwader (J) 54. This meagre force comprised approximately 100 aircraft.

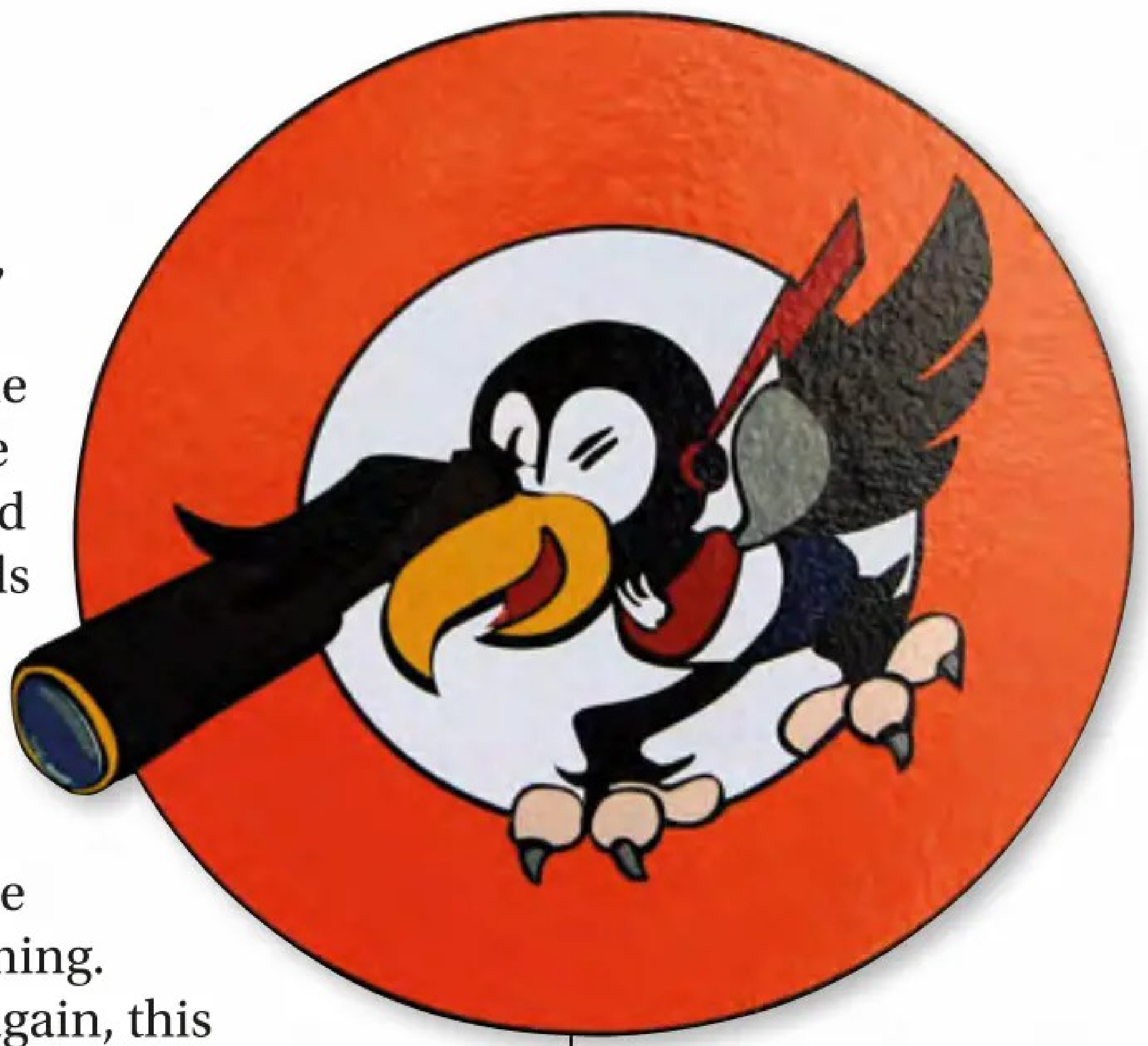
On the morning of 30 March 1945, around 1,300 Consolidated B-24 Liberators and Boeing B-17 Flying Fortresses of the US 8th Air Force took off from English bases with an escort of 815 North American P-51 Mustangs and Republic P-47 Thunderbolts. Targets for the day were U-boat yards and ports in northern Germany, at Hamburg, Bremen and Wilhelmshaven, with the bombers divided into three roughly equal-sized groups. The four-engine 'heavies' arrived over the target in the early afternoon, and despite cloudy conditions their bombing was reasonably accurate.

The Germans had detected the build-up of the bomber formation while it was still over East Anglia, allowing them plenty of time to prepare a response by the limited Luftwaffe air defence resources available. A total of 29 Me 262s were committed by JG 7, but the Luftwaffe pilots did not particularly distinguish themselves. They claimed seven aerial victories, most of them by Rudorffer's I. Gruppe, but in reality only five of the bombers were actually lost during the mission to all causes. The escorting American fighter pilots claimed seven Me 262s destroyed, one probably destroyed, and five damaged.

One of the successful pilots, Lt Col John D. Landers of the 78th Fighter Group, recalled his victory over the usually elusive prey: "I opened fire at 700 yards and got hits on one jet. He slowed down, but again made the mistake of turning. I opened fire again, this time at 400 yards and obtained some good strikes. The Me 262 made a steep left bank and my next burst hit in the cockpit area."

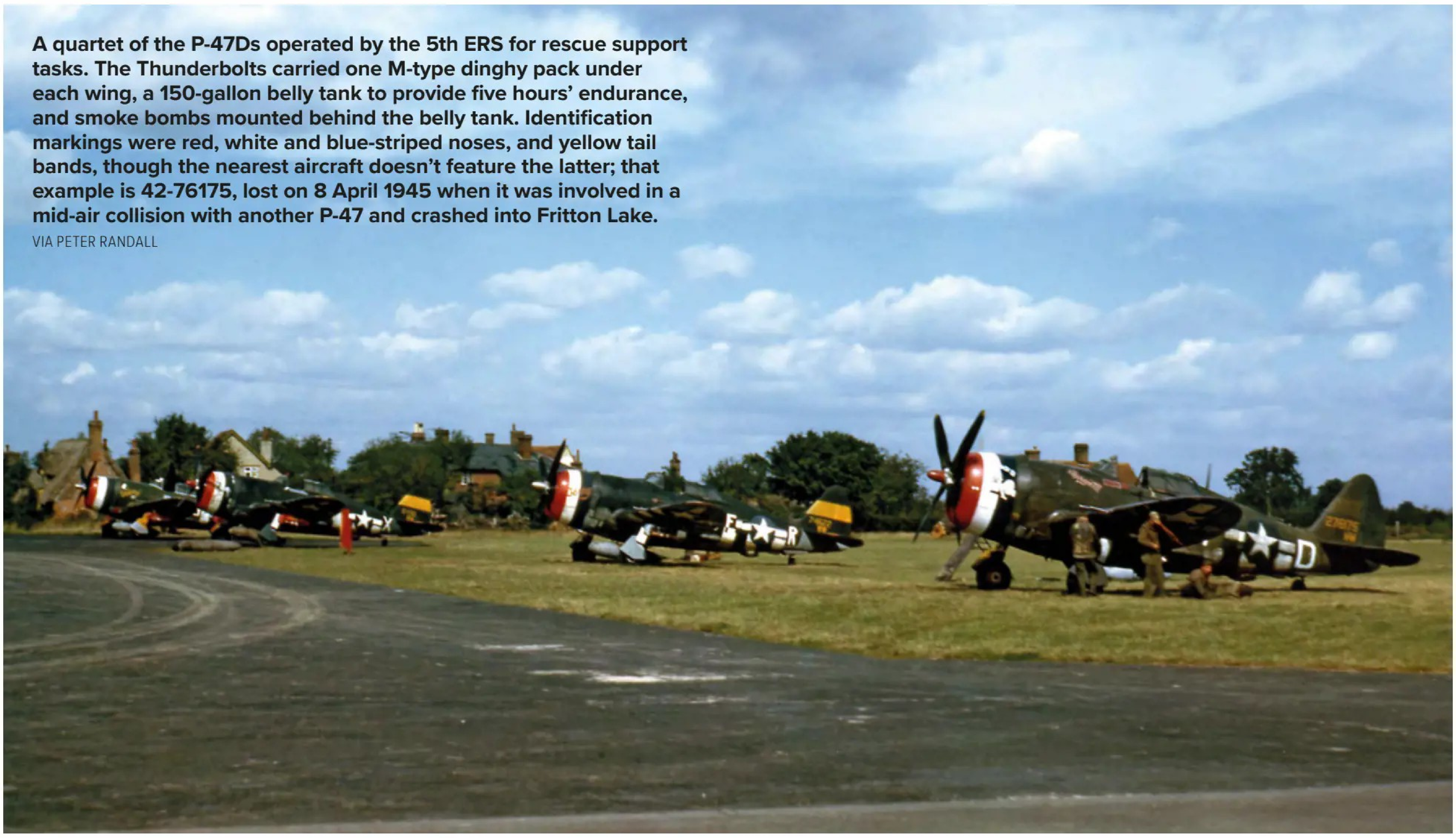
The Americans were also a little optimistic with their claims. However, German records confirm one Me 262 pilot was shot down and killed near his home base of Kaltenkirchen, another bailed out unhurt, while combat veteran and Ritterkreuz-holder Ltn Karl Schnörrer suffered severe leg wounds and took to his parachute after combat with P-51s. What is undeniable is that the American fighters were very successful in warding off the intercepting German jets.

The raid caused devastation at the German ports: the light cruiser *Köln* was hit six times and settled in shallow water at Wilhelmshaven, 11 U-boats were sunk and seven

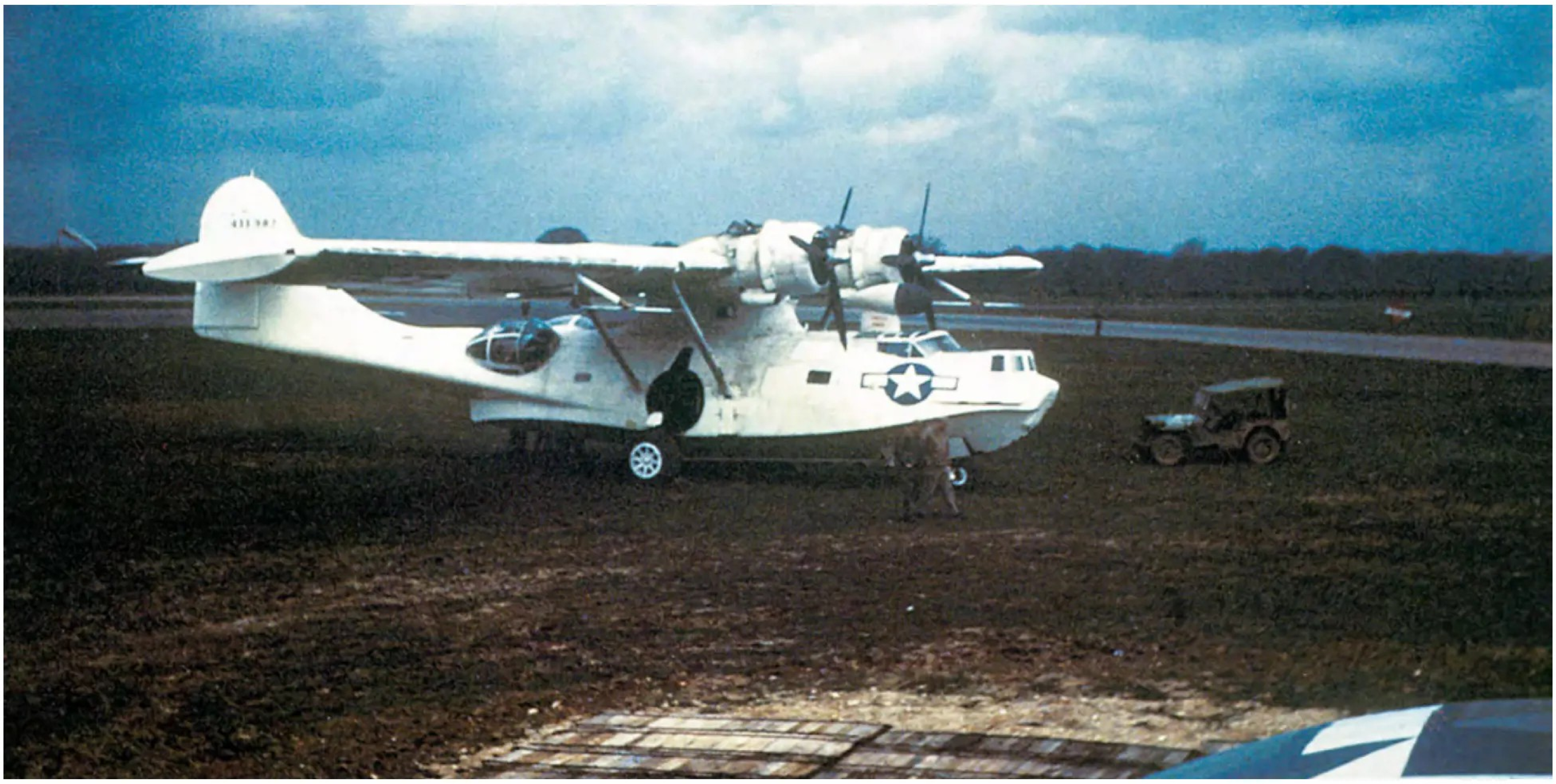


ABOVE: The emblem of the 5th ERS.

OPPOSITE: Being serviced on the apron at Halesworth, this 5th Emergency Rescue Squadron OA-10A is 44-33916 ***Sophistacat***, regular mount of 2nd Lt John V. Lapenas and his crew. However, it was undergoing maintenance on 30 March 1945, so they used ***Miss Pick Up*** instead. VIA PETER RANDALL



A quartet of the P-47Ds operated by the 5th ERS for rescue support tasks. The Thunderbolts carried one M-type dinghy pack under each wing, a 150-gallon belly tank to provide five hours' endurance, and smoke bombs mounted behind the belly tank. Identification markings were red, white and blue-striped noses, and yellow tail bands, though the nearest aircraft doesn't feature the latter; that example is 42-76175, lost on 8 April 1945 when it was involved in a mid-air collision with another P-47 and crashed into Fritton Lake. VIA PETER RANDALL



ABOVE: OA-10A 44-33987 at Debden. It was very late in the war when sufficient Catalinas became available to equip AAF rescue squadrons like the 5th ERS. Above the cockpit of this one is the teardrop-shaped fairing for the AN/APS-3 search radar. VIA PETER RANDALL

damaged, and the American bombs laid waste to port facilities. Although it had been a largely uneventful mission for the 8th Air Force, one of the Mustang pilots involved would soon find himself in trouble, setting in motion a series of events that eventually led to German jet fighters destroying an Allied flying boat.

By the spring of 1945, the Allied air-sea rescue (ASR) organisation based in England was very efficient, and had proved a godsend to thousands of fighter and bomber crewmen 'down in the drink'. In 1942 and the first half of 1943 the Americans largely relied on the long-established British ASR service, but throughout the second half of 1943 and into 1944, as the scale of Army Air Forces operations increased, the 8th Air Force developed its own organisation to assist personnel forced down in the Channel or North Sea. There were also efforts at unit level, such as fighter groups including one or two designated spotters on their missions in order to patrol over the sea and monitor any downed pilots and crews.

A conference at the Air Ministry on 8 May 1944 identified the desperate need for an independent AAF spotter unit. This resulted in the creation of Detachment B of the 65th Fighter Wing, with a complement of 25 war-weary P-47Ds, at Boxted in Essex. Operations commenced in May 1944, just in time for D-Day. The P-47s were used in pairs as spotter-planes, locating and then orbiting the downed airmen, dropping smoke flares, escorting distressed aeroplanes, and providing protection for other rescue aircraft. Various tour-expired pilots and men who were surplus to their unit's designated establishment were provided to Detachment B upon its creation, making it somewhat of a rag-tag outfit.

> ***"They were informed of a P-51 not far away and headed to it"***

As the winter of 1944-45 set in, steps were taken to improve Detachment B's capabilities. To allow the unit to rescue pilots itself, in early 1945 it received some Canadian Vickers-built Consolidated OA-10A Catalinas, which were suitably modified prior to starting operations during March. In January 1945 it was redesignated as the 5th Emergency Rescue Squadron, under the command of Maj Edward L. Larson, who previously led the P-47 detachment. Simultaneously, it was transferred to Halesworth in Suffolk and assumed responsibility for all air-sea rescue operations for the 8th Air Force. Half-a-dozen B-17s arrived in March. The P-47s and B-17s could drop dinghies and lifeboats respectively, along with smoke floats and rations, and the Catalinas were capable of landing to conduct rescues themselves.

A report from a wartime AAF publication provided some details on the 8th Air Force air-sea rescue process: "Fast P-47s and P-51s [sic] of a special Air/Sea Rescue detachment [...] take to the air to meet the bombers returning from a mission. At first B-24s were on this patrol, but speedier and more numerous single-engine ships make much better cover. Already flying over the trouble zones, with their radios tuned to frequencies of both the shore stations and the rescue boats, they speed in pairs to the aid of any distress call and may have the crippled plane located even before it takes to the water, and will drop small emergency dinghies to assist the ditchers. Circling the position, and radioing to the rescue launch and heavier equipment planes for assistance, the bugaboo of an extended search is eliminated."

On the British side, in the spring of 1945 No 280 Squadron was based at Beccles, a mere seven miles from the 5th ERS, and was equipped with the twin-engined Vickers Warwick, which could also drop dinghies and lifeboats. No 280 Squadron was

Miss Pick Up

This is believed to be the regular crew of *Miss Pick Up*, not the one which flew the aircraft on 30 March 1945. Today this nose art is faithfully replicated on the Plane Sailing-operated Catalina — likewise a Canadian Vickers-built machine — which is based at Duxford. IWM

a typically kaleidoscopic RAF unit, with British, Australian, New Zealand, Canadian and American flying personnel on strength. Although the aircrews of the ASR units were not often engaged in operations that put them in harm's way, they sometimes found themselves in precarious situations, and occasionally in need of rescue themselves.

On the afternoon of 30 March, 1st Lt Donald E. Hicks of the 5th ERS had alighted OA-10A 44-33917 *Going My Way* on the North Sea to rescue the crew of a 491st Bomb Group Liberator. However, the flying boat was damaged while landing in the rough conditions and could not take off, so the rescuers soon became the rescued. A British high-speed launch (HSL) reached them that evening with guidance from Warwicks of No 280 Squadron. The damaged Catalina was then sunk.

One of the Allied aircraft involved in the rescue of Hicks' crew was OA-10A 44-33915 *Miss Pick Up* of the 5th ERS, piloted by 2nd Lt John V. Lapenas, with the callsign Teamwork 75. Lapenas — together with co-pilot 2nd Lt Theodore J. Langan, along with 2nd Lt Charles V. Buffington, Cpl Daniel Hochstatter, Cpl William F. Dotson and Sgt James A. McMullin Jr — had located his comrades, but did not attempt a landing due to the high seas. Circling the area at 16.00, they were informed of a Mustang down not too far away and quickly headed in that direction. The pilot in trouble was Lt Daniel N. Myers of the 363rd Fighter Squadron, 357th Fighter Group. His relatively new P-51D-20-NA, 44-72328/B6-I *Superwolf*, had suffered engine trouble while returning from the 8th Air Force raid described earlier, forcing him down in the bitterly cold waters of the North Sea, just 7km north of the German-occupied island of Schiermonnikoog.

Myers took up the story: "Suddenly I was flying in a cloud, in what was a cloudless sky and my engine screeched to a stop. Instantly I knew what had happened for I had seen it happen to others. The thermostat stuck and the coolant boiled away. We were at 18,000 feet so I did have some time to think. I made sure my parachute, dinghy and Mae West were properly attached and then released the canopy and pushed myself out of the airplane. Instantly, I struck the stabilizer with my stomach which hurt, but did no harm, thanks to all the sit-ups we had done during our training."

He landed in the water and inflated his dinghy, but could not right it, so simply clambered on top of it and awaited rescue. Some of his comrades from the 363rd FS circled above, and his CO, the triple ace Maj Robert W. Foy, rushed back to base to help organise the rescue.

John Lapenas and his escort of two Mustangs arrived at

Me 262 A-1a Werknummer 111690 'White 5' was in service with I./JG 7, the unit whose jets shot up the stricken Catalina. VIA MORTEN JESSEN

RIGHT: The Warwick ASRIs of No 280 Squadron such as HG211 were stationed at Beccles, close to the 5th ERS's Halesworth home. R. ARBERY

the reported position, and in the near-darkness and poor visibility, spotted flares fired by Myers. The OA-10A put down in heavy swell at 19.05, but it soon became apparent the starboard engine was dead, due to a burst oil line.

Dan Myers wrote of the rescue attempt, "A Catalina flying boat appeared, landed nearby and taxied quite close. A crewman threw me a line but it fell short, and he tried several more times. However, the sea was getting rough and there was some wind which made it difficult. Slowly the Catalina started drifting away from me and I could no longer hear its engines so I assumed the pilot had lost one or both engines and was no longer able to manoeuvre to pick me up."

❖

Now both Myers on his dinghy and the crew of *Miss Pick Up* were adrift just off the enemy coast, and night had fallen. The very seasick men used their lone engine to taxi north-west away from enemy territory, leaving Myers to his fate. The Mustang pilot later recalled, "since there was nothing else I could do, I did what I do best, and fell asleep". He soon drifted ashore and was captured by the Germans.

While Dan Myers headed towards captivity in the early hours of 31 March, and *Miss Pick Up*'s crew endured a very challenging night aboard their stricken Catalina, the Allies prepared for another large bombing raid on targets in northern Germany. This time, it was the turn of the British. Having made its name through nocturnal raids against German cities, the RAF's Bomber Command flew an increasingly large number of daylight missions in the final months of the war. Continuing the Allied campaign against German submarines, on 31 March Bomber Command's Nos 1, 6 and 8 Groups sent 469 Avro Lancasters, Handley Page Halifaxes and de Havilland Mosquitos against the Blohm und Voss U-boat yard in Hamburg. It was an early start, as they took off at dawn with an escort of 181 Mustangs provided by Fighter Command. As had occurred on the previous day, the Germans quickly detected the approaching bomber formation, and 38 Me 262s from JG 7 and KG (J) 54 provided the only Luftwaffe aerial opposition.

III./JG 7 pilot Hermann Buchner, a former ground attack ace, later wrote, "On 31 March, there was something new for us — an early scramble. We were still at breakfast in the dining room and the weather was not very good. The cloud base was 150-200 metres above the ground… We climbed in tight formation into the clouds, heading westwards… As we got closer, we could clearly see what kind of bombers they were — RAF Lancasters — on their way to attack Hamburg."

The bombers released their loads through the overcast, but little damage was done to the intended objectives. As the British exited the target area, the lightly defended tail of the bomber stream was pounced on by the German jet fighters, with predictable results. On this morning, 11 RAF heavy bombers would be lost to both the R4M rockets and guns of the jets, and

All OA-10As, built by Canadian Vickers, were ordered by the US Navy as PBV-1As but on behalf of the USAAF and delivered to the army as new aircraft. VIA PETER RANDALL

the anti-aircraft gunners. It would be the most successful JG 7 mission of the entire war, but still only represented a 2.3 per cent loss rate for Bomber Command.

As the battle raged over northern Germany, the crew of *Miss Pick Up* continued to float around off the Frisian Islands in their stricken Catalina. However, intense efforts were being made to locate and rescue them, and Myers had not been forgotten either. At 05.56, Warwick HG137/Z of No 280 Squadron took off with an airborne lifeboat, accompanied by four Mustangs of the 479th FG, and after a successful two-hour search the lifeboat was dropped near the OA-10A at 09.00. Lapenas described the drop as "excellent". However, upon making radio contact with the airmen on *Miss Pick Up*, the Warwick discovered the lifeboat was breaking up after colliding with the Catalina. The seas were too rough for Lapenas and his colleagues to board it in any case, so the Americans elected to stay in the relative comfort of their aeroplane.

◆

The sanctuary of John Lapenas and his crew was about to be destroyed, and by a most unlikely culprit. The Germans had noticed all the aerial and naval activity not far off their territory, and three Me 262s of I./JG 7 were scrambled from Kaltenkirchen as a result. The 250km to *Miss Pick Up* were covered very quickly indeed, and the German pilots were able to take advantage of the weather, with low overcast, to sneak in at low altitude and attack the flying boat. Four Mustangs of the 362nd FS/357th FG were providing cover at the time, but failed to spot the intruders until it was too late. The German 30mm MK 108 cannon made very short work of the Catalina, and the Me 262s turned to starboard and streaked away towards home. It is believed the successful German pilot in this encounter was Ltn Hans-Dieter 'Hadi' Weiss of I./JG 7, a former flying instructor.

The Mustangs gave chase as best they could, and 22-victory

5TH ERS CATALINAS

SERIAL	NAME	COMMENTS
44-33913		Assigned to unit but did not reach UK, lost 26 September 1946
44-33915	*Miss Pick Up*	Arrived at Bovingdon January 1945, lost 31 March 1945
44-33916	*Sophistacat*	Arrived at Bovingdon January 1945
44-33917	*Going My Way*	Arrived at Bovingdon January 1945, lost 30 March 1945
44-33920		Arrived at Bovingdon January 1945
44-33922		Arrived at Bovingdon January 1945
44-33923		Arrived at Bovingdon January 1945, later served with 6th RS
44-33987		All-white camouflage scheme, had accident 7 September 1951
44-33991		Delivered to Peru in 1947
44-33995		Ran ashore 1 September 1946 and salvaged
44-34003		
44-34005		Still operational September 1946
44-34013		
44-34017		Taxiing accident 10 July 1946
44-34028		Hit parked B-17s 24 June 1948
44-34067		

ABOVE: An ambulance awaits an RAF navigator rescued by OA-10A 44-33915 *Miss Pick Up* on 23 March 1945, just a week before it flew for the last time. IWM

ace Maj Leonard K. 'Kit' Carson recalled, "I didn't see them before they passed below me and even though I yelled out over the radio to my two remaining wingmen and we pulled out all the stops, it was impossible to effect an interception that would cut them off. Both [sic] of the 262s were firing at the Catalina by the time I could get my sights on the lead ship; even then it was a long-range deflection shot". Carson and 1st Lt Myron A. Becraft each submitted a claim for a Me 262 damaged 15 miles north of the island of Juist, but these claims against fleeing jet fighters were a little optimistic.

Meanwhile, down on the sea the Catalina had been catastrophically damaged by the 30mm cannon shells. The hull was punctured, the port wing damaged and the tail had been completely shot off, but — amazingly — none of the men were wounded.

Lapenas and the others escaped the sinking flying boat and boarded three dinghies, as noted in their official report: "Numerous holes were in the plane and it started to leak profusely and settle in the water. The left float gave way and the plane listed to port… We proceeded to abandon ship taking with us all emergency equipment and supplies possible". Unbeknown to the six Americans, this marked the beginning of a lengthy ordeal.

While it counted as a victory for JG 7, 'Kit' Carson did not think much of the German attack: "The water temperature is not much above freezing and there was no reason for the Germans to attack. These men were unarmed and hors de combat, out of business. If they wanted to attack the rescue or the Mustangs — fine. Come on up, fellas, we'll have at it; but an unarmed ruptured duck like the Catalina didn't pose a threat to anyone — and the Luftwaffe knew they were unarmed."

> ***"An unarmed ruptured duck like the Catalina didn't pose a threat"***

With the situation having changed dramatically, No 280 Squadron Warwick HG208/Y2 arrived at the Catalina's reported location at 13.10, escorted by three P-51s from the 364th FS/357th FG led by 1st Lt Edward R. Fry. They spotted three dinghies lashed together with six survivors; Australian pilot Fg Off John R. Maxwell dropped a lifeboat from the Warwick at 13.50, and Lindholme gear 25 minutes later. Lindholme gear was a rescue system with five containers, including one with a nine-man inflatable dinghy, and others with emergency rations and clothing. On this occasion, the gear overshot by 90m, but the Catalina crew were all aboard the lifeboat by 14.55. Yet another issue then arose: its engine refused to start.

RIGHT: The Catalina crew after finally transferring from their dinghy to the lifeboat dropped by an RAF Warwick. AWM SUK14140-7

5th ERS crew members gather around — and on — OA-10 44-33991. When its AAF days were over, this Catalina was sold to Peru and served with the Peruvian Air Force. VIA PETER RANDALL

Things improved towards darkness, when Warwick HG123/A arrived to monitor the situation, and at 17.48 one of the 5th ERS B-17s dropped an A-1 Higgins airborne lifeboat, the first operational use of this equipment. A crewman from the B-17 later wrote, "There was a 35 mph wind blowing with white caps all over the area. It's hard to describe how helpless and pathetic they were under those circumstances."

The men from the OA-10A boarded their new craft and got under way in heavy seas, guided towards distant rescue vessels by flame floats dropped by the Warwick. The rescue had proceeded as best as could be hoped to this point, in rough seas and only eight miles from the enemy coast. However, contact was lost with the survivors at 19.25 on 31 March due to bad visibility. They would not be seen again for three days.

The 5th ERS and the No 280 Squadron Warwicks flew numerous missions on 1 April in bad weather and terrible visibility, accompanied by Mustang escorts, but the Catalina crew was not located. It was the same situation the next day, and Lapenas reported their worsening condition on the second of the month: "The weather continued the same throughout Sunday and so did the sea. Everyone and everything was soaking wet and it was impossible to keep dry. It was bitter cold and some of the men started to worry about their feet. They were numb."

The weather finally improved on the morning of 3 April, by which time the Higgins lifeboat's engine had stopped working. It proved possible to rig up their 'Gibson Girl' emergency transmitter and send regular signals, one of which was heard by the ASR service.

Two Warwicks spotted the very relieved Catalina crew at around 10.50. The RAF aircraft dropped fuel, which was retrieved and taken aboard, but Lapenas and his men could not get the engine started. They would continue drifting during the night of 3-4 April, with Allied aircraft and rescue motor launches attempting to establish contact. Eventually, at 07.45 on 4 April, two British launches reached the American airmen and RML 498 landed them at Great Yarmouth on the morning of 5 April. They had been exceptionally lucky to survive their lengthy ordeal, with a few suffering from frostbite and exposure. Daniel Myers, whose bail-out into the North Sea initiated the entire episode, would survive his brief imprisonment, and passed away in December 2004.

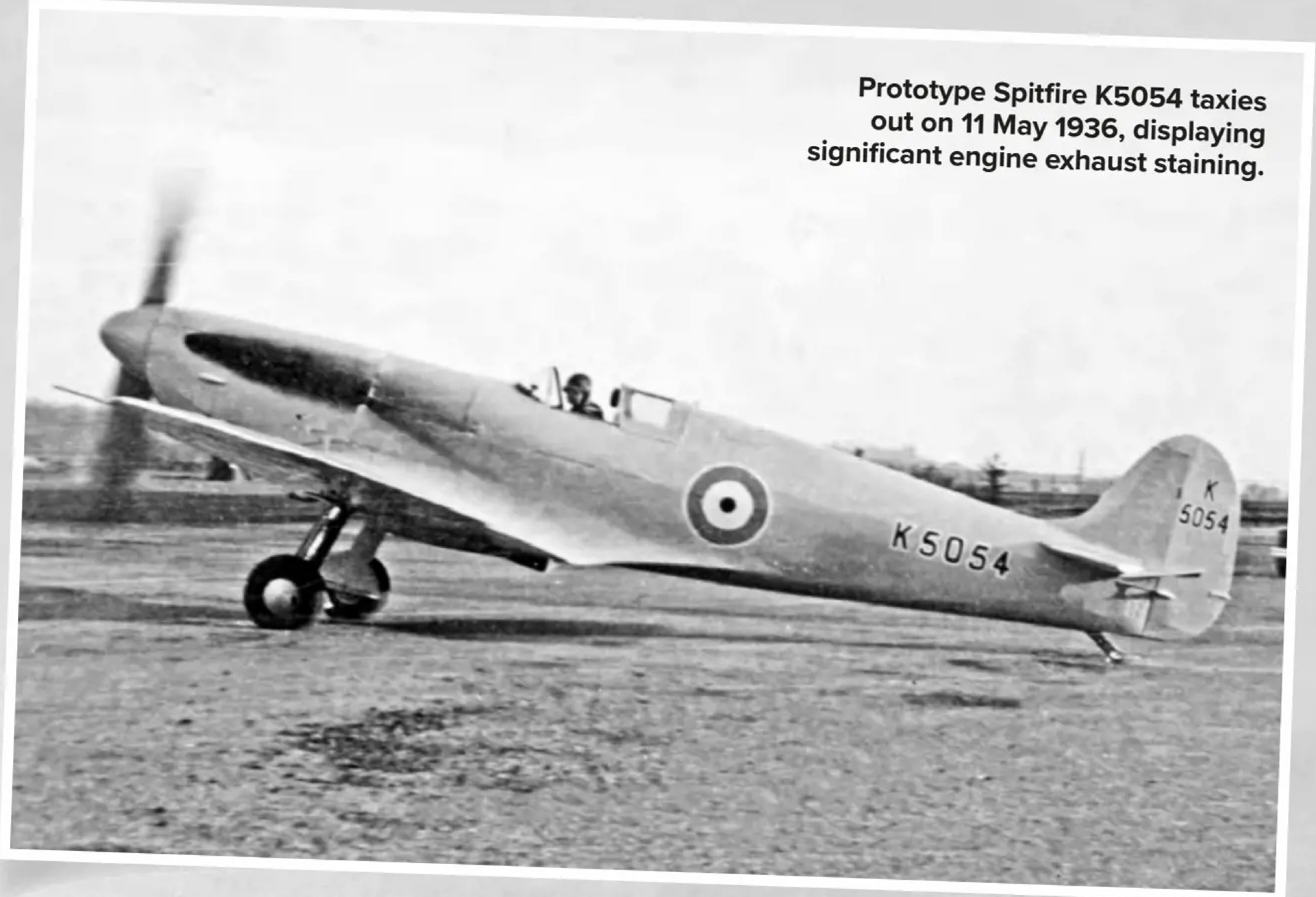
The squadron at the heart of the story, the 5th ERS, would fly a total of 3,616 sorties by war's end, helping to rescue more than 950 men — including 37 by the Catalinas. This was quite an achievement for a unit that started with some hand-me-down P-47s and surplus pilots.

Thanks to Michael Balss, Steve Coates, Russell Guest, Morten Jessen, David Legg, Jochen Prien, Peter Randall, Adam Thompson and Andreas Zapf.

EASTLEIGH

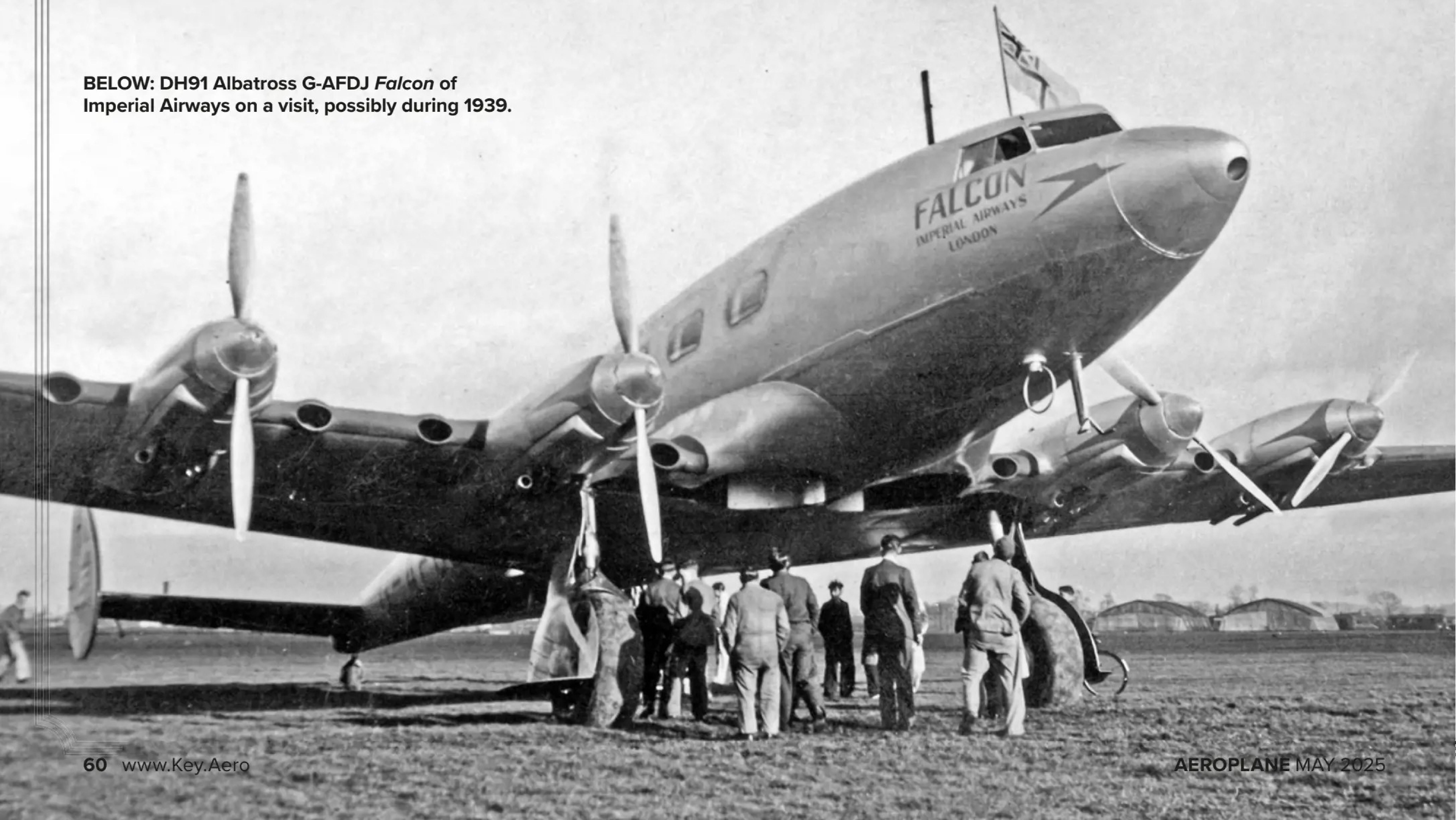
IN THE '30s

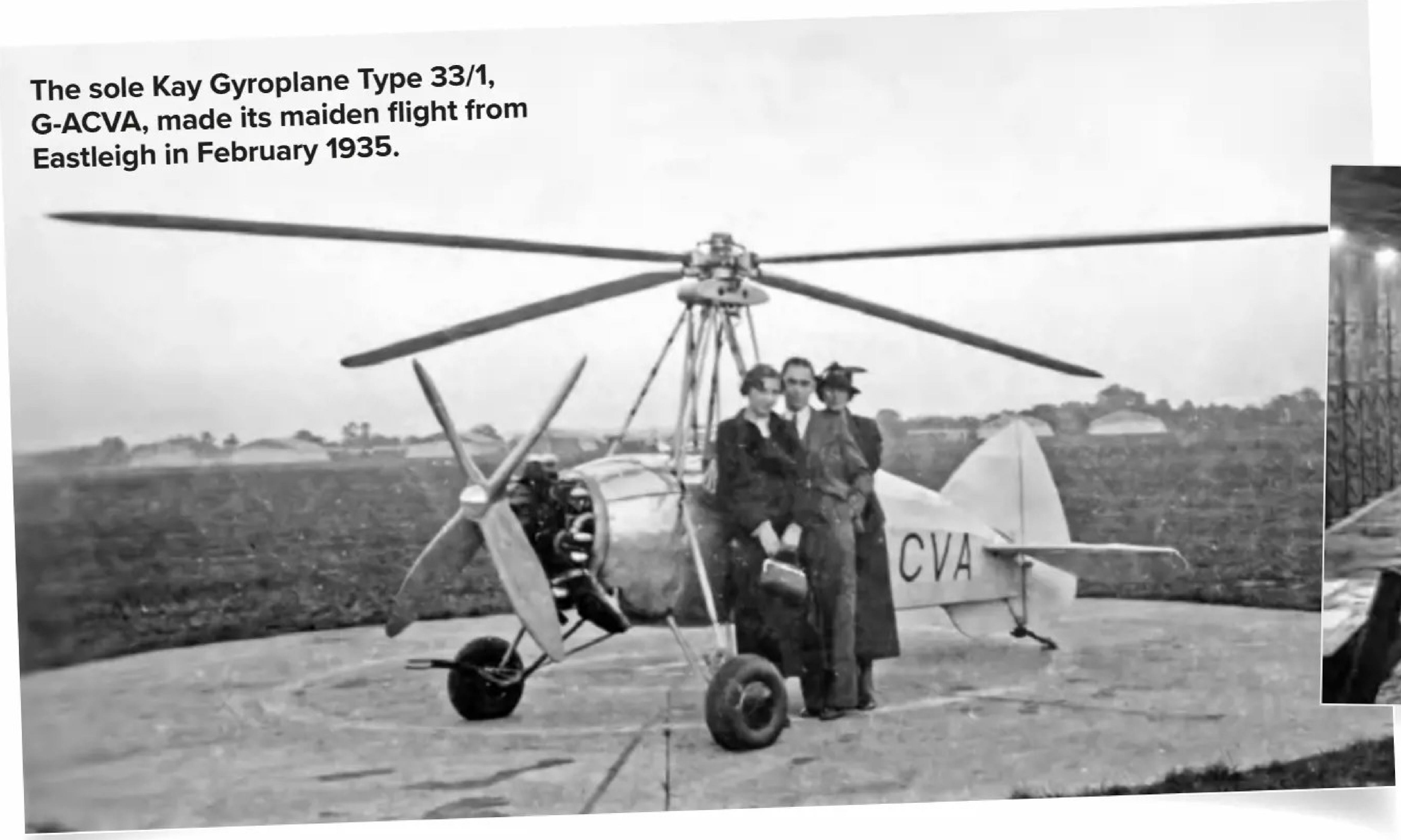
More than 40 years ago, while putting together material for a Schneider Trophy commemoration, **Stephen Wolf** found these photos of different types — including the early Spitfires — at Southampton's Eastleigh Airport during the late 1930s. Their exact provenance is unknown, but they depict a very significant period in this famous aerodrome's annals



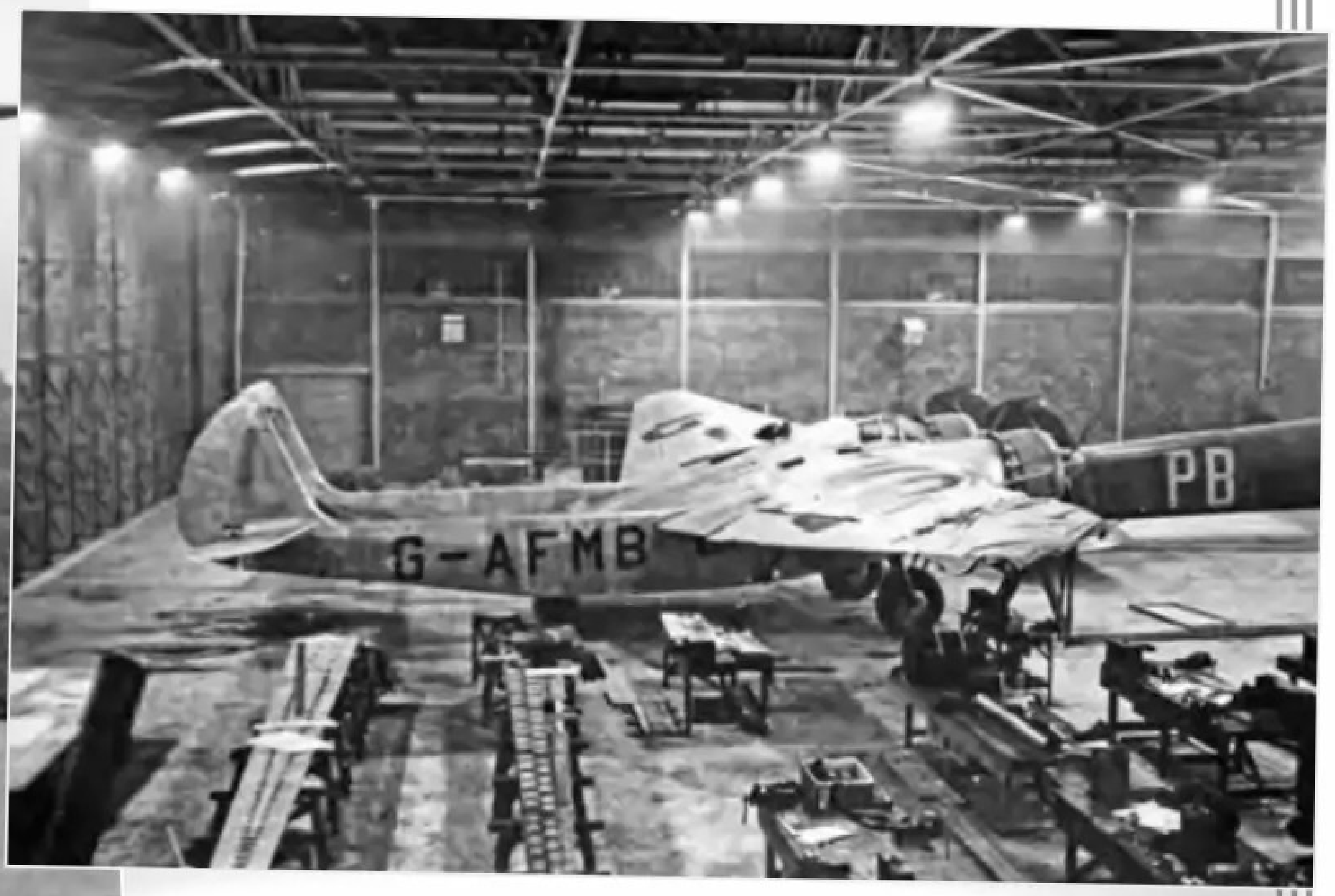
Prototype Spitfire K5054 taxies out on 11 May 1936, displaying significant engine exhaust staining.

BELOW: DH91 Albatross G-AFDJ *Falcon* of Imperial Airways on a visit, possibly during 1939.

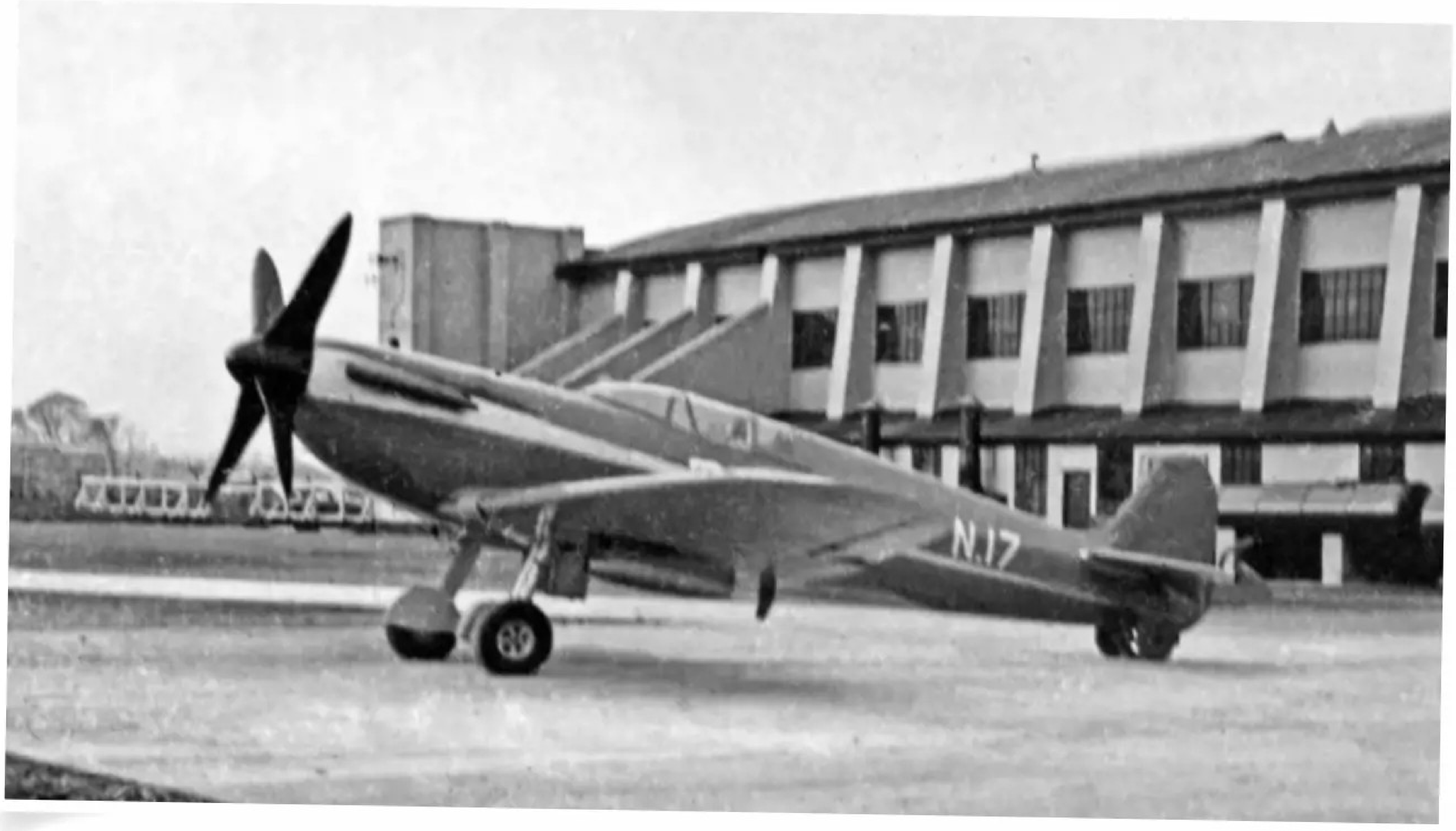




The sole Kay Gyroplane Type 33/1, G-ACVA, made its maiden flight from Eastleigh in February 1935.

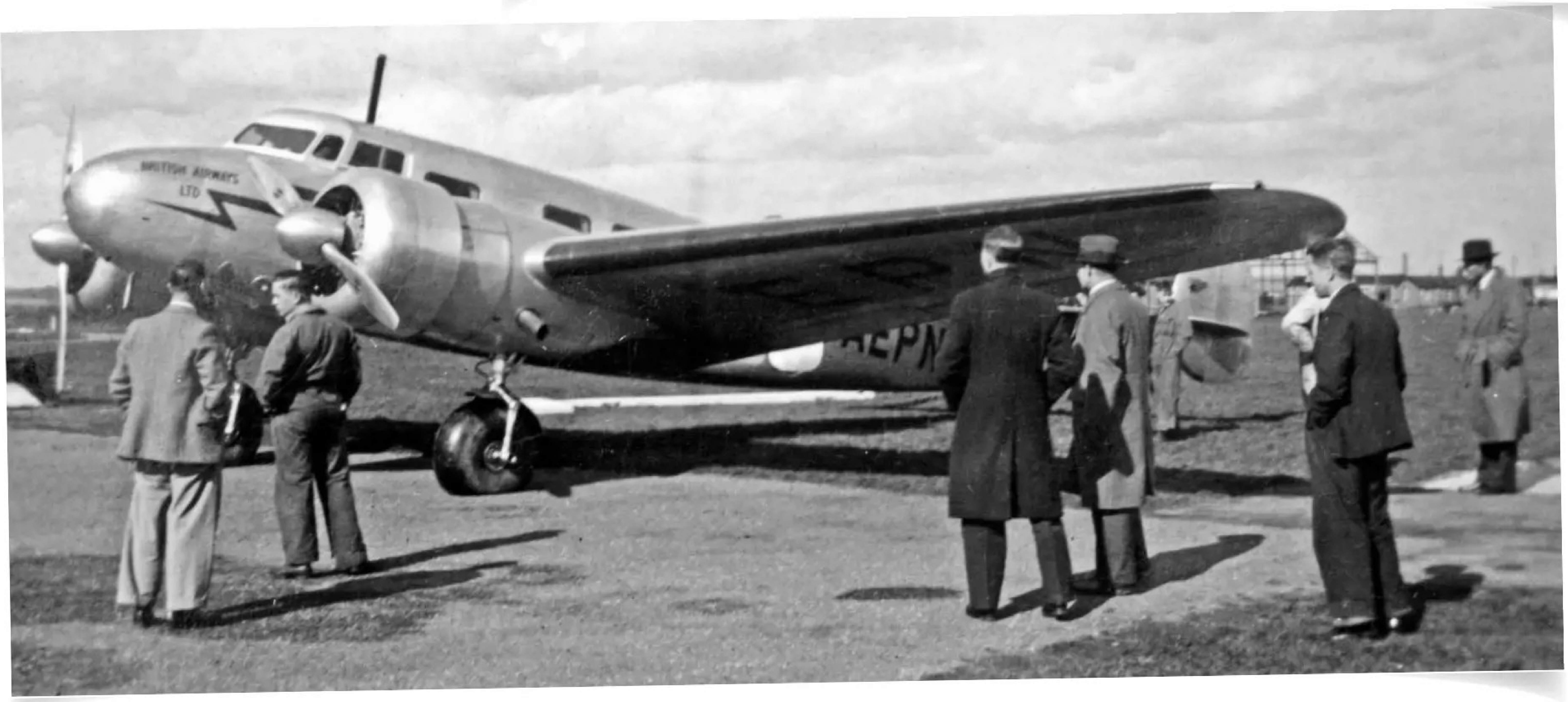


Cunliffe-Owen OA-1 G-AFMB had not long been registered when it was photographed in front of the manufacturer's hangar in December 1938. The first flight of this Burnelli-inspired 'lifting fuselage' design took place the following month.



ABOVE: R. J. Mitchell's 20hp Rolls-Royce present to either meet or see off King's Flight Dragon Rapide G-ADDD.

RIGHT: It may have been unsuccessful in attaining its speed record aim, but Supermarine's Type 323 Speed Spitfire, registered N17, looks the part on the Eastleigh apron in November 1938. Whether this was before or after its maiden flight on the 11th of the month is unknown.



The state of the small airliner art circa 1938: Lockheed 10A Electra G-AEPN of the pre-war British Airways, which was impressed into RAF service as W9105 following the outbreak of hostilities.

Have you got photos to contribute to Personal Album? If so, e-mail the editor at ben.dunnell@keypublishing.com

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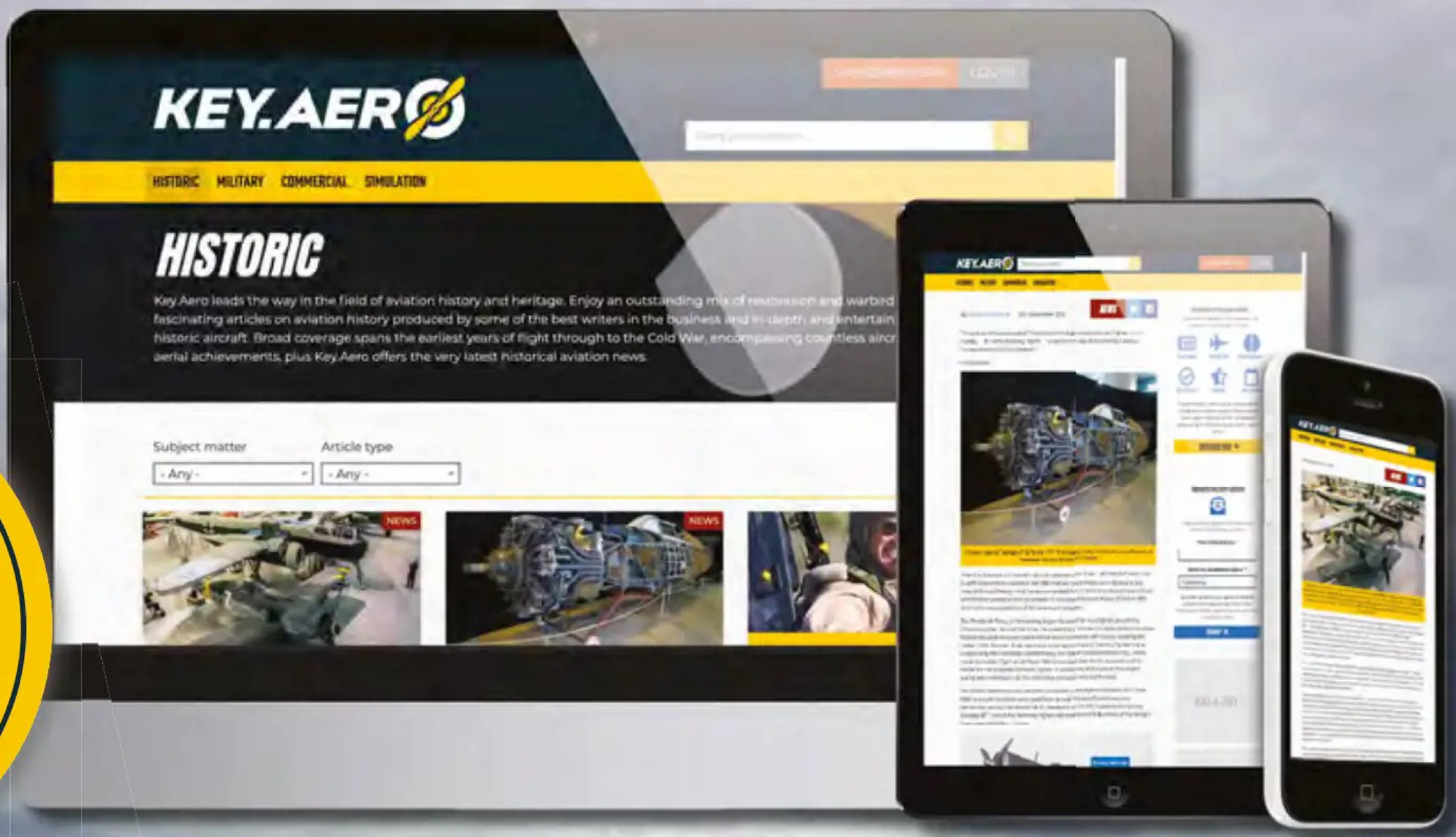
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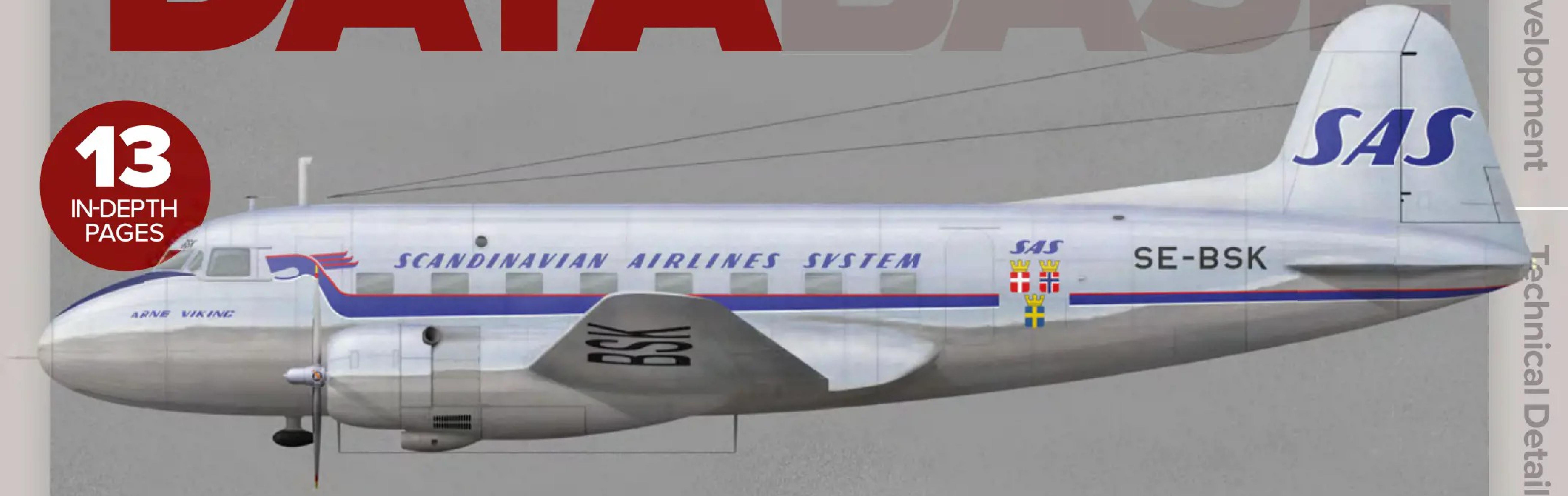
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SCANDINAVIAN AIRLINES SYSTEM
SAS
SE-BSK
BSK
ARNE VIKING

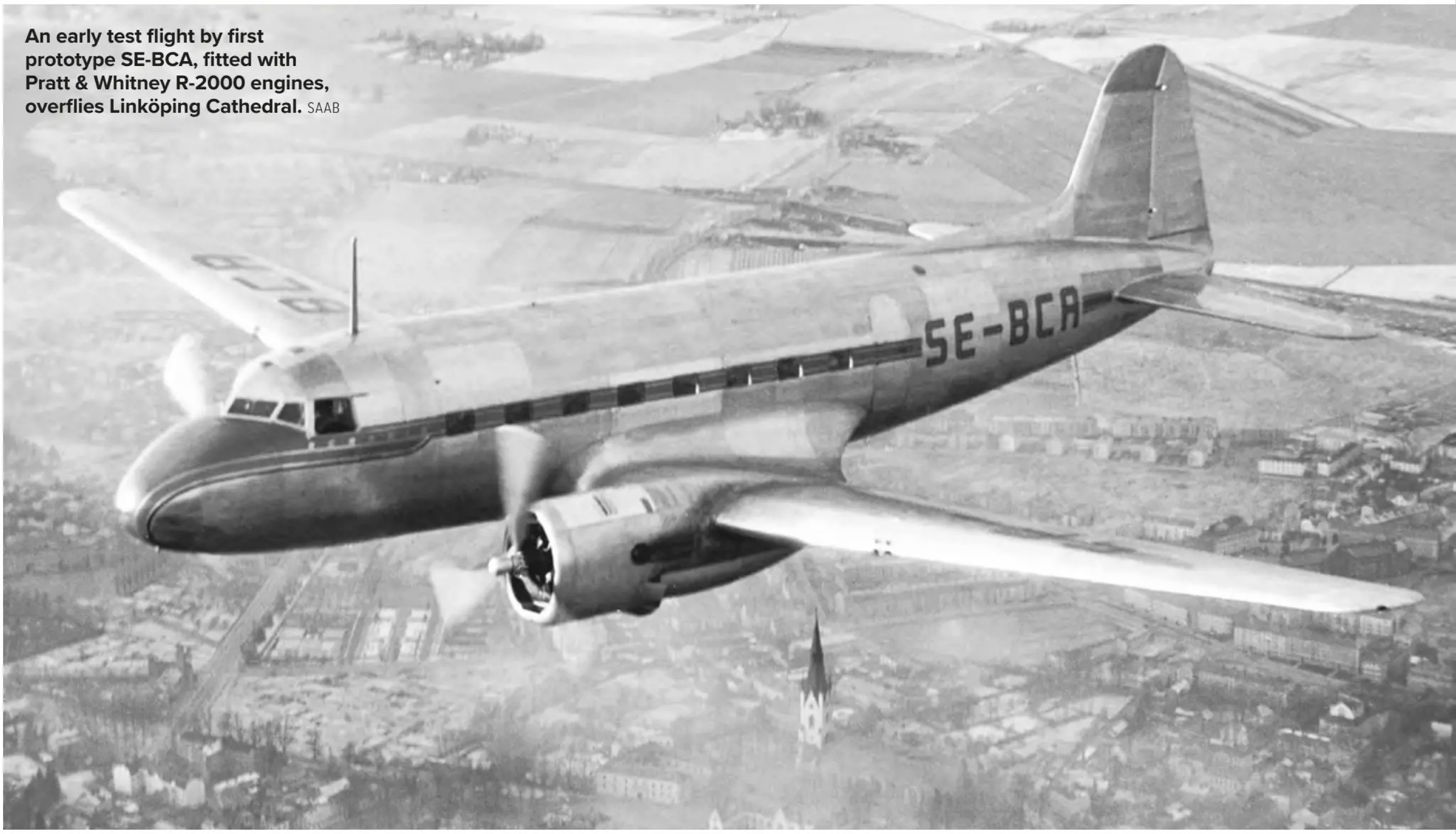
SAAB 90 SCANDIA

WORDS: JAN FORSGREN

TOP: The second-to-last example built: Saab 90 A Scandia SE-BSK of SAS. CHRIS SANDHAM-BAILEY

MAIN IMAGE: Scandia PP-SQS was delivered to VASP in July 1955. VIA MICHAEL MAGNUSSON

Sweden's first indigenous airliner was one of several aircraft intended as a replacement for the DC-3/C-47



An early test flight by first prototype SE-BCA, fitted with Pratt & Whitney R-2000 engines, overflies Linköping Cathedral. SAAB

Following cancellation of the Saab BJ 24 — similar in appearance to the Messerschmitt Bf 110, albeit featuring a tricycle undercarriage — on 9 December 1943, the Saab design office found itself with a much-reduced workload. Although various civilian projects had been put forward, including a 30-seat airliner, there was little progress. Nevertheless, Saab was aware the war was coming to an end, and with that would come fewer orders for military aircraft. The likelihood of a burgeoning civilian market required it to design and build suitable machines.

During an informal meeting in late December 1943 — reportedly over Christmas dinner — Carl Florman, managing director of the airline Aktiebolaget Aerotransport (ABA), and Ragnar Wahrgren, his counterpart at Saab, discussed the requirements for a new airliner. It was expected that airline traffic would increase rapidly following the end of hostilities. The notion of augmenting and replacing the carrier's small fleet of Douglas DC-3s and Junkers Ju 52/3ms was enthusiastically received by ABA. Saab, however, remained somewhat sceptical, partly since its only previous experience was with purely military aircraft. Nevertheless, Saab saw it as highly desirable to capitalise on ABA's experience and requirements.

On 26 January 1944, ABA presented a 10-page memo in which it recommended that Saab concentrate on designing an airliner for shorter routes. The Pratt & Whitney TW C-3 Twin Wasp, reverse-engineered and built in Sweden as the STW C-3, was the suggested powerplant, although the use of more powerful, 1,500hp engines was also envisaged.

Three different proposals were submitted, all variants of a common basic concept for an all-metal, low-wing aircraft. The main differences were in the outer wings, fin and stabiliser. Known as Projekt A1, A2 and B respectively, the first was to have somewhat improved take-off and landing characteristics than existing aircraft, capacity for 18-20 passengers and three or four crew, a range of 1,300km and a cruising speed of 300km/h at an altitude of 3,000m. Projekt A2 had the same passenger and crew capacity, vastly improved take-off and landing characteristics, and was exceptionally easy to maintain. However, the range had been reduced to 800km, and the cruising speed to 275km/h. Intended for short-range routes, Projekt B was to carry 30 passengers and two or three crew, with 400km range at a cruising speed of 250km/h. A high-wing variant with a non-retractable undercarriage was seen as an alternative.

Tord Lidmalm (left) was project manager for the Scandia, with Bror Bjurströmer (right) being appointed as chief designer. VIA TORD JONSSON/SAAB VETERANS

Saab delivered an initial study on 23 February, largely based on Projekt A1. The airliner was to have a capacity of 25-30 passengers, a range of 1,000km, a cruising speed of 300km/h and a maximum weight of 11,600kg. By this time Saab had conducted limited market research, exploring the possibility of selling the aeroplane to customers other than ABA, as well as securing information on its potential foreign rivals.

Two days later, the Saab management approved additional funding. Bror Bjurströmer was appointed as chief designer, with Tord Lidmalm in charge of the design office. Bo Hoffström of ABA's project department and the airline's senior engineer Karl Lignell were also part of the design team. The type was to be some 60 per cent bigger than any other aircraft hitherto designed by Saab.

As a result, Projekt CT (Civilt Trafikflygplan, or civilian airliner) began in earnest, its aim to produce a DC-3 replacement. It is important to note that ABA had still not committed to purchasing the as-yet unnamed airliner. Instead, it wished to have freedom in choosing the best aircraft available. This would of course include types from manufacturers outside Sweden.

Although designing such an aircraft from scratch was something new for Saab, by late 1943 work had begun to convert seven Boeing B-17 Flying Fortresses into 14-seat ad hoc airliners. The first such was delivered in the autumn of 1944 to Svensk Interkontinental Lufttrafik AB (SILA). Formed in 1943, SILA was to operate intercontinental routes, with ABA handling Scandinavian and European services.

In the summer of 1944, the Kungliga Flygförvaltningen (KFF, Royal Air Board) gave Saab permission to work on a civilian airliner, while waiting for new military contracts. This was necessary as Saab had been formed from the outset to design and build military aircraft for the Flygvapnet. Initially, it had been proposed that the new aircraft should be a combined transport/bomber. This notion proved short-lived, and it was conceived as a purely civilian airliner. However, it was mentioned that it could have military usefulness as a troop and/or cargo transport.

Although early plans called for a prototype to be completed and flying by mid-1945, this proved overly optimistic. One contributory factor was a workers' strike in early 1945. Additionally, the airliner was designed to be certified according to the US Civil Airworthiness Rules 04 (CAR 04), seen as an absolute necessity to sell aircraft on the American market. Doing so involved a vast number of tests not required on Saab's earlier military aircraft. A full-scale wooden mock-up of the cockpit and forward fuselage was built so as to check the flow of rain across the windows and evaluate the risk of a birdstrike. The cabin interior was designed by Sixten Sason.

The name Scandia was selected via an employee

The R-2000 powerplants initially installed on SE-BCA were purely an interim measure, being felt too underpowered for airline service. VIA MICHAEL MAGNUSSON

SE-BCA
BCA
SCANDIA
A colourised period publicity shot of SE-BCA following re-engining with R-2180-Es, hence the revised cowlings. SAAB

On the grass at the Linköping factory airfield sit the first three Scandias, with SE-BCA in the foreground. SAAB

competition, the result being announced in the Saab company magazine on 21 December 1945. Around the same time, the type was detailed by the Swedish aviation magazine *Flyg*. It was described as, "finally giving Sweden a real basis for a military air transport organisation that we are currently lacking". There was speculation that, with added fuel reserves, the Scandia could be operated on the trans-Atlantic route.

Temporarily registered as SE-BCA, the Scandia prototype made its maiden flight on 16 November 1946, lasting about one hour. The crew comprised Saab test pilot Claes Smith, co-pilot Olle Hagermark and radio operator Bengt Carlsson. According to Smith, the flying characteristics were generally pleasant. The Scandia showed itself to have a low stalling speed, remaining controllable down to 110-115km/h. Single-engine performance was deemed excellent. However, Smith mentioned that the aircraft exhibited high stick forces, with rudder harmony being less than perfect.

Demonstration tours

Saab made extensive efforts to market the Scandia. Apart from the sales office in Linköping, US representation was established in New York. Advertisements proclaiming the aircraft's virtues appeared frequently in the national and international aviation media. But the most powerful sales arguments were through demonstration flights across Europe, North Africa, the USA and South America. Delegations from a host of different airlines also visited the Linköping factory. The Scandia had one advantage over its American competitors, in that the cost of purchasing the Swedish-built aircraft would not need to involve scarce US dollars.

The first tour began on 13 March 1947, Copenhagen, Amsterdam, Brussels and Zurich being visited. Apart from flight demonstrations, it involved service trials. At the time, there was no lack of airlines searching for a new short- to medium-range airliner. Apart from ABA, for whose specifications the Scandia had been more or less specifically tailored, Sabena, KLM, Swissair and Finland's Aero O/Y were considered as potential buyers. But although much interest was shown in the Swedish aeroplane, no orders were placed.

The same was true of customers further afield. On 13 March 1947 — the same day the prototype left Linköping on its inaugural sales tour — *Flyg* magazine said, "Not least the flight safety of the Scandia has resulted in interest from abroad, with the trade and industry commission that recently arrived back from South America mentioned that enquiries about the Swedish airliner were made even there". The newspaper

DATAFILE

SCANDIA PROJECTS

During the development phase, ABA had shown tentative interest in ordering 15 Scandias with a pressurised cabin. As a result, in 1946 Saab initiated development of the 90 B. The fuselage had to be redesigned, becoming circular in shape, with the cross-section resembling that of the Boeing 377 Stratocruiser, albeit on a smaller scale. Apart from this, the 90 B was essentially similar to the 90 A-2. During a visit to Convair in San Diego, Tord Lidmalm had studied the CV-240's pressurised cabin. If plans for the pressurised Scandia had gone ahead, the gear would have been supplied by AiResearch. Although the 90 B-3 was offered in 1950-51, particularly to US airlines, this variant was not built.

The 90 A-3 featured four additional passenger seats by removing the galley, increasing capacity to a 'high-density' 36 passengers, along with two extra windows in the fuselage. Several of the Brazilian Scandias were modified with this cabin layout. During the spring of 1949, TWA was offered a developed Scandia with room for 42 passengers.

Fitting the Scandia with twin floats was briefly considered in 1948. The intention was to replace the float-equipped Ju 52/3ms of Det Norske Luftfartsselskap (DNL) on routes in northern Norway, where suitable land airfields were scarce. Norwegian company Norsk Flyindustri, which had previously designed a float undercarriage for the Saab 91 Safir, was given the job, but it came to nothing.

Given how Convair successfully turned the piston-engined CV-240 into the turboprop CV-580, Saab toyed with the idea of developing a variant based on the 90 A-3 and 90 B-3, to be powered by Bristol Siddeley Mamba turboprops. This, too, never came to pass.

ALTITUDE-101M
SCANDIA

"Altitude — 101m" reads the sign on the control tower at this unidentified, further-flung tour stop for the Scandia.
VIA MICHAEL MAGNUSSON

Svenska Dagbladet somewhat optimistically reported on 29 March, "Tentative orders for some 70 aircraft have been placed, with the first production aircraft likely to leave the factory next spring. Between six and 10 aircraft will be built on a monthly basis."

Back at Linköping, flight-testing continued. During the winter of 1947-48, the prototype underwent a series of modifications. This involved fitting more powerful Pratt & Whitney R-2180-E1 engines and Hamilton Standard four-blade propellers. Trim tabs were added to the rudder and elevators to reduce stick forces.

A second, more ambitious tour took place between 9 August and 11 November 1948, taking in 11 countries: Norway, Ireland, Britain, Denmark, the Netherlands, Belgium, Switzerland, France, Spain, Portugal and Finland. Aero O/Y seemed especially keen. In June 1949, Scandia prototype SE-BCA was used on the routes from Helsinki to Kemi, Vaasa and Rovaniemi, with crew members from the Finnish carrier on board. Although the Convair CV-240 had been preferred, procurement plans for the US airliner were put on hold during September 1949, Aero O/Y's directors proposing the purchase of Scandias to the airline's supervisory board in January 1950. Two months later, Capt Olli Puhakka visited Stockholm to air-test the type. In the event, the CV-340 was selected instead in March 1951.

The selling-points of the Scandia when put up against its two main competitors, the CV-240 and the Martin 202, included flight safety and lower overall operating costs. The Scandia was somewhat slower, calculated as ending up five minutes behind the Martin over a 500km distance, and seven minutes behind the Convair. However, the Scandia had a significantly lower wing loading, thus requiring shorter runways. Other competitors included C-47s modified as airliners, these being both cheap and readily available in vast numbers.

> ***"A lot of airlines were in need of a short- to medium-range type"***

The second tour was well-received by airline representatives, as well as foreign media, although no firm orders materialised. On 27 August, the Scandia arrived in Denmark. A Danish journalist later wrote, "It was a beautiful day and the copper roof of Kronborg Castle glittered like gold in the sunshine. The left engine was cut off with the propeller feathered. The aeroplane was stalled and when the castle was beneath us the nose was pointing downwards. For a few seconds I experienced the feeling of sitting in a dive-bomber with the castle as the target. A moment later we were level again and after a sharp turn against the cut-off engine, we made the short trip back to Kastrup". HRH Prince Bernhard piloted the Scandia during its visit to Soesterberg, declaring it to be the best twin-engined aircraft he had flown.

According to Claes Smith, the stops in Ireland and Britain resulted in several technical snags, resolved by improvisation on the part of the accompanying technicians. "Upon landing in Dublin following a tour of Ireland with the Irish government aboard, the nosewheel came off as we taxied [towards the apron], but we somehow managed to get away with this without any outsider noticing anything. At Prestwick we suffered an electrical malfunction, and following take-off an elevator trim link broke, resulting in strong vibrations. This was repaired at a military airfield that we happened to come across.

"During the first demonstration flight in London, the tail strut could not be retracted, with Tord Lidmalm and another strong-armed Saab employee simply tearing it off. The next morning, the nosewheel and main undercarriage shock absorbers collapsed. As thick fog rapidly rolled across the airfield, the demonstration flights were cancelled. Arriving back at Linköping a few days later, we only had one engine, the second engine having decided to become unserviceable near Heligoland."

Starting on 16 August 1949, a third demonstration tour saw France being visited once again, as well as Greece, Egypt and Ethiopia. At Linköping the Scandia prototype was then fitted with six 400-litre auxiliary fuel tanks in the cabin and flown back to Paris for the impending Atlantic crossing, a first for a Swedish-built aircraft. The only problem occurred at the US Air Force's Bluie West One base in Greenland, the aeroplane being impounded for two days before permission was granted to continue.

During the US tour, the Scandia was demonstrated to United Airlines and TWA, the Pratt & Whitney factory at Hartford, Connecticut, being visited on several occasions. Howard Hughes flew it on 5 November, the regular captain, Claes Smith, for once relegated to the co-pilot's right-hand seat. To Smith's consternation, Hughes managed to get the Scandia into a spin. Upon landing at Culver City Airport, Hughes declared himself very pleased with the Scandia, a tentative TWA order for 20 being discussed. Again, though, no US airline signed on the dotted line.

Better fortune awaited in Brazil, SE-BCA being flown there in December 1949. Making an intermediate landing at Recife, the Scandia ended up on its tail, resulting in minor damage. The tail cone was quickly repaired courtesy of the Brazilian Air Force. One interesting problem arose during the initial visit.

The Aer Lingus DC-3s and the distinctive terminal in the background place the Scandia in Dublin, a destination on its second sales tour. VIA MICHAEL MAGNUSSON

SE-BCA
SCANDIA
EI-AD

As Claes Smith had not been born in Brazil, he was officially not allowed to fly in Brazilian airspace. But where there's a will, there's a way. It was soon discovered that Smith did indeed have Brazilian parents, although he'd never actually met them.

Flights from Santos Dumont airport outside Rio showed the Scandia off to Aerovias Brasil and Viação Aérea São Paulo (VASP). Following take-off, Smith climbed steeply over the statue of Christ on Sugarloaf Mountain, showing the excellent flying characteristics of the Swedish airliner.

Sales prospects in Argentina resulted in two trips, the first involving a week of demonstration flights from 25 November, while the second began on 23 December and covered the Christmas holiday, showing off the Scandia to local airlines FAMA, Zonda, Aeroposta and ALFA. No orders were forthcoming. In early 1950, the aeroplane visited Caracas, Curaçao and Bogota, after which it was flown back to Brazil.

Orders

Following an extensive evaluation of the Airspeed Ambassador, Convair CV-240, Martin 202 and the Douglas DC-9 — a designation then applied to an unbuilt twin-piston transport — ABA placed an order for 10 Scandias on 10 April 1948. By this time, it had become part of the newly formed Scandinavian Airlines System (SAS), which brought together Denmark's Det Danske Luftfartselskab (DDL), Norway's Det Norske Luftfartselskap (DNL) and ABA of Sweden. The Scandias were to have 75 per cent utilisation on Scandinavian routes, and 25 per cent utilisation on European services. The purchase contract also specified that the prototype was to be leased to ABA between 11 December 1948 and 19 March 1949 for pilot training and service trials.

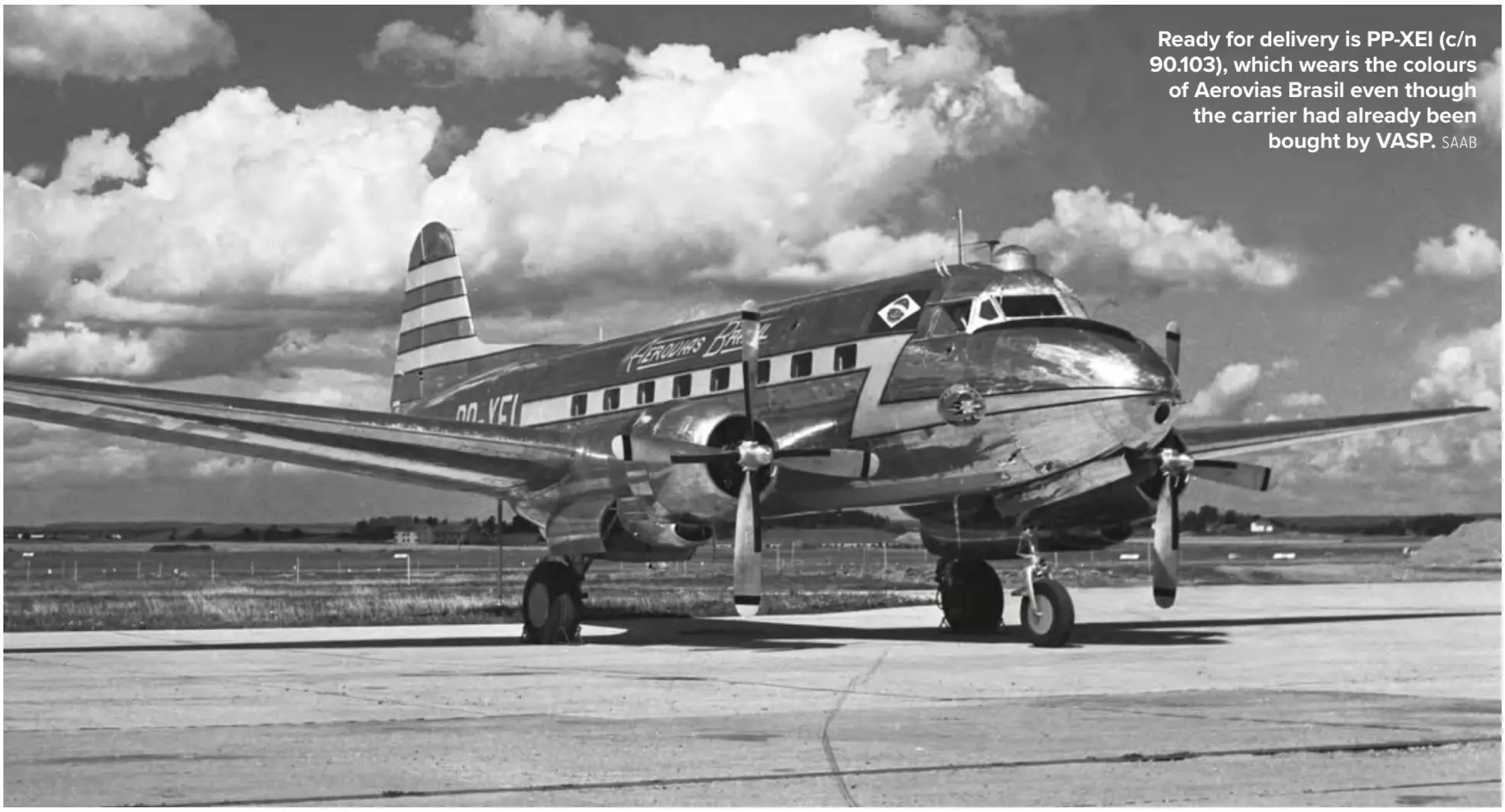
The latter involved modifying the aircraft to carry freight. The cabin floor was strengthened, fittings for securing fasteners and straps installed, and the windows covered with veneer panels. Six passenger seats were reinstalled on the port side of the cabin, with small holes in those panels providing a view out. No paying passengers were allowed, though, the seats being used to carry accompanying technicians and engineers. The cargo-carrying runs mostly involved transporting flowers from Nice and Albenga. Other loads taken by the Scandia included Russian caviar and furs. When the aircraft was returned to Saab, a total of 14 freight services had been flown, as well as about 100 training and test sorties.

> “Saab had entertained high hopes for the Scandia”

The first series production aircraft, SE-BSA (c/n 90.101) flew on 12 November 1949. Beginning on 15 December, it underwent extensive service trials, which featured tropical work in Khartoum and Luxor. A total of 247.18 hours was accumulated during the course of some 200 flights. On 13 June 1950, the Scandia was awarded an ICAO type certificate A, a necessity for regular airline operations.

Aerovias Brasil placed an order for six Scandias, including the prototype, in April 1950. Before any of them had been delivered, VASP gained control of the airline. ABA was persuaded to relinquish four of its Scandias, among them the first production machine, resulting in just six initially being taken on charge by the Swedish airline. SE-BCA departed from Hartford, Connecticut — the location of the Pratt & Whitney factory — on 8 June 1950 to begin its delivery flight to VASP. The first production Scandia, SE-BSA, left Linköping on 17 June, arriving in São Paulo six days later.

There was some dissent within SAS regarding the type. When the order for 10 aircraft was signed, ABA general manager Carl Florman proclaimed that the Scandia would result in, as he put it, “Scandinavian aviation on Swedish wings”. The Norwegian DNL and the Danish DDL in particular took a dim view of Florman's brash statement. Although two Scandias would eventually be registered in


Ready for delivery is PP-XEI (c/n 90.103), which wears the colours of Aerovias Brasil even though the carrier had already been bought by VASP. SAAB

Norway — as LN-KLK and ’KLL — Danish interest in it was virtually non-existent, no Danish pilots ever being trained to fly the Swedish-designed airliner.

Cancellation

With the emergence of the Cold War, the Flygvapnet (Swedish Air Force) underwent a large-scale expansion and modernisation programme. As a result, the Kungliga Flygförvaltningen (Royal Air Board, KFF) and the Flygvapnet demanded priority for the J 29 jet fighter over the Scandia. The harsh reality was that Saab’s production capacity was insufficient to simultaneously manufacture both, as well as the Safir primary trainer/tourer. Following negotiations, it was decided the government would provide economic compensation to Saab for the cancellation of the Scandia programme. There were, however, firm orders to take into account.

Alternative options were considered, with Fiat being approached to build the Scandia in Turin. According to an April 1950 *Business Week* article, it was speculated that Boeing would produce a developed, 38-seat pressurised Scandia under licence. In the same piece, it was mentioned that a Boeing-built Scandia would cost $400,000.

Nothing came of the Italian and American proposals. Instead, Dutch manufacturer Fokker, in co-operation with Aviolanda, assembled the final six Scandias in 1954-55. Only 18 had been built. Although Saab had entertained high hopes for the Scandia, the aircraft had failed to gain significant orders. Until the emergence of the 34-seat Saab 340 twin-turboprop commuter airliner in 1983, the Swedish firm was to produce military aircraft only.

DATAFILE

A RARE ENGINE

The Saab 90A Scandia was unique in one respect, in that it was the only production aircraft to be powered by the 1,500hp Pratt & Whitney R-2180-E engine, itself a development of the pre-war R-2180-A. Only 30 R-2180-As were completed, powering the Douglas DC-4E experimental airliner, the North American XB-21 and the Stearman XA-21. With war looming, it was developed into the R-2800, which was built in large numbers to power numerous US combat aircraft. Nevertheless, work on the R-2180 began anew once the war was over, the first test run of the improved R-2180-E taking place on 25 September 1945. The R-2180-E was a supercharged 14-cylinder, twin-row radial, developing 1,500hp on take-off. In basic terms, it consisted of one half of the 28-cylinder R-4360 Wasp Major, many parts being common to both.

The R-2180-E had a ‘power-egg’ configuration, being deemed suitable for installation as an upgrade on the DC-4 and other airliners. Eight different sub-variants were projected, of which the R-2180-2SE12G was selected for the stillborn Douglas DC-9. But re-engining the vast fleet of C-54/DC-4s with R-2180-Es never caught on.

The 1,200hp R-1830 Twin Wasp had been considered for the Scandia. It was ruled out as providing insufficient horsepower. Instead, the prototype was powered by two 1,450hp R-2000s, the same as were used on the DC-4. However, the R-2000 too was considered somewhat underpowered. In a December 1946 memo, ABA stated that the requirements for selecting the Scandia included a pressurised cabin and R-2180 engines.

Following a trip to the USA in early 1947 by Scandia designer Bror Bjurströmer and Saab deputy CEO Sven Otterbeck, it was reported a deal had been struck with Pratt & Whitney, “for the delivery [...] of Pratt & Whitney engines specifically manufactured for us”. The company finally supplied its first production R-2180-E on 31 January 1949. A total of 75 units were built. Apart from the Scandia, the R-2180-E was used to power the Piasecki XH-16 helicopter prototype.

One of the contributing factors for ABA in selecting the R-2180-E was possibly due to four Boeing 377 Stratocruisers having been ordered by SILA, powered by the 28-cylinder R-4360. However, the Stratocruiser purchase was cancelled before any had been delivered, all four of them being transferred to BOAC.

TECHNICAL DETAILS

Saab's first airliner adopted a far-from-radical configuration

The Scandia production line at Saab's Linköping factory in August 1949.
VIA MICHAEL MAGNUSSON

The Saab 90A-2 Scandia was a twin-engine, low-wing aircraft of all-metal construction, intended as a 24 or 32-seat passenger airliner on short and medium-range routes. Its two Pratt & Whitney R-2180-E1 Twin Wasp 14-cylinder radial engines drove constant-speed Hamilton Standard Hydromatic 34 D1 propellers, each 3.73m in diameter, and equipped with electrical de-icing gear.

The monocoque-structure fuselage was built up from frames and stringers, to which an outer Alclad stressed skin was riveted. The tail cone was removable. The nose section contained the compartment for the pilot, co-pilot, radio operator and steward. A seat for an accompanying flight mechanic was also placed in this area. The main entry door was behind the wing on the port side of the fuselage. Of four cargo compartments, the main one was aft of the passenger cabin, augmented by two in the belly (front and rear) and one in the nose, for a total capacity of 11 cubic metres.

The cantilever wing was built up from five separate and removable sections: the centre wing, to which the engine nacelles were fitted, the left and right outer wings, and the two wingtips. The centre wing section was mated to the lower portion of the fuselage by means of four attachment points, two each to the front and rear spars. Slotted trailing-edge flaps were located between the ailerons, and the port aileron had a trim tab. Each outer wing section contained two fuel tanks. For de-icing, a petrol-driven furnace was provided ahead of the front spar in each of the outer wings. The wingtips were bolted to the outer wings and incorporated navigation lights.

Both the elevators and rudder had trim tabs. These surfaces were fabric-covered, being statically and dynamically balanced with drainage holes for water and condensation. A de-icing furnace was positioned behind the rear fuselage cargo compartment.

The fully retractable undercarriage was hydraulically operated. The nosewheel was capable of being steered 27° to the left and right, and it could be disengaged when the aircraft was being towed, allowing for a narrower turn radius. An electrically operated retractable strut behind the rear cargo compartment was lowered during loading and offloading.

The fuel system involved separate systems for each engine in the outer wings, with the possibility of cross-feeding. There were four fuel tanks, two in each of the outer wings, total capacity being 2,890 litres. In an emergency, fuel could be vented through nozzles in the trailing edges of the wingtips. The two 115-litre oil tanks were mounted in front of the engine firewall. Each of the oil systems included an oil cooler, an oil diluting device and a feathering pump.

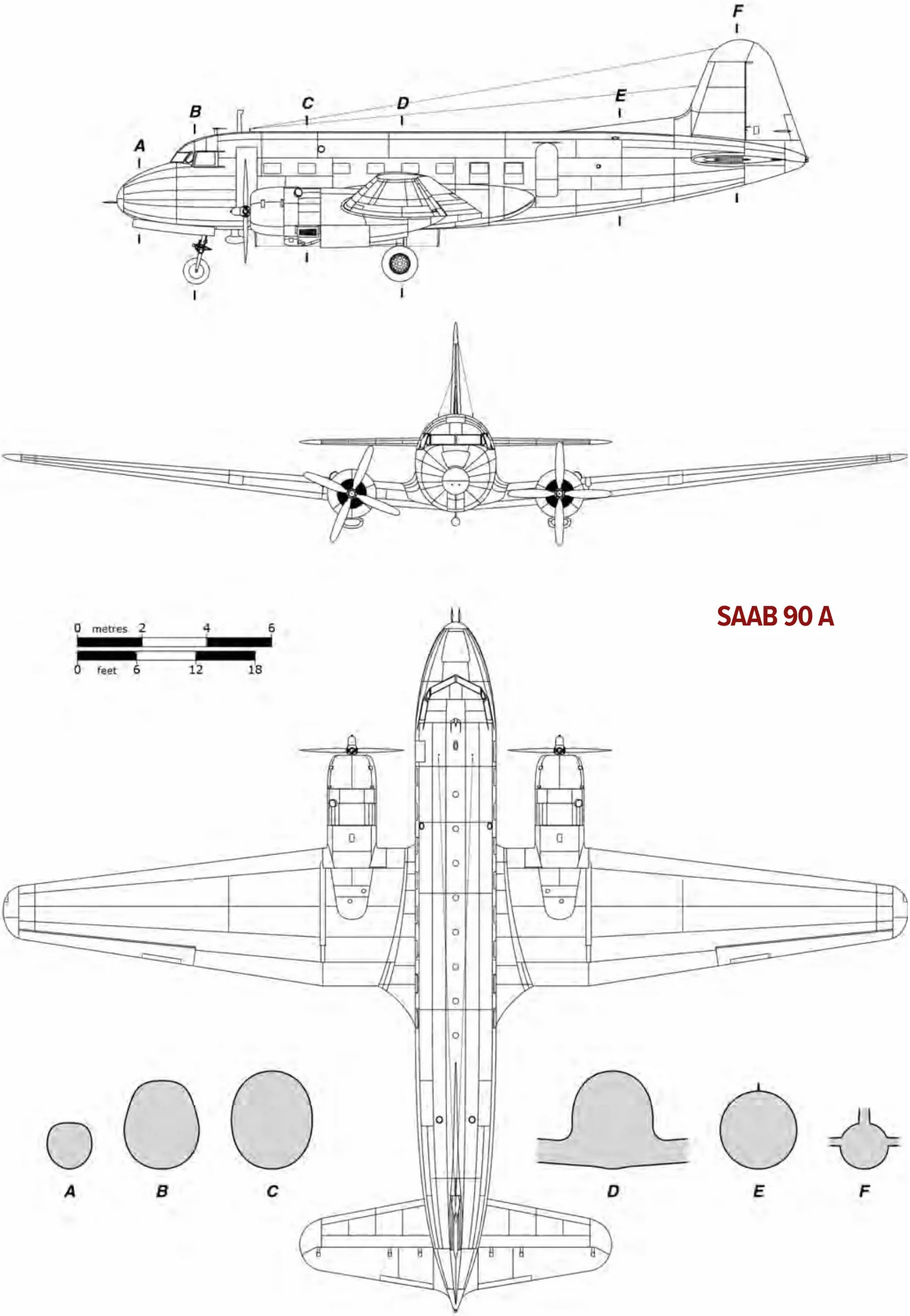
The hydraulic system consisted of a common drive section, fed by a hydraulic pump to the respective hydraulic systems for the undercarriage, flaps and brakes. An emergency hydraulic pump was in the cockpit. The brake system was separate from other hydraulic systems, also including the nosewheel steering.

Pilots praised the spaciousness of the Scandia's cockpit, this being SE-BCA. VIA MICHAEL MAGNUSSON

A VASP Scandia in low-density configuration, in which it was able to carry 24 passengers.
VASP VIA MICHAEL MAGNUSSON

DATAFILE **SPECIFICATIONS: SAAB 90 A-2**

POWERPLANTS	
Two Pratt & Whitney R-2180-E1 Twin Wasps, 1,400hp each, or 1,800hp with water injection on take-off	
DIMENSIONS	
Span:	28.0m (91.8ft)
Length:	21.3m (69.9ft)
Height:	7.1m (23.3ft)
Wing area:	85.7 sq m (922.5 sq ft)
PERFORMANCE	
Maximum speed:	450km/h (280mph)
Cruising speed:	390km/h (242mph)
Range:	2,400km (1,491 miles)
WEIGHTS	
Empty:	16,000kg (35,274lb)
Loaded:	9,960kg (21,958lb)
PASSENGERS	
24-32	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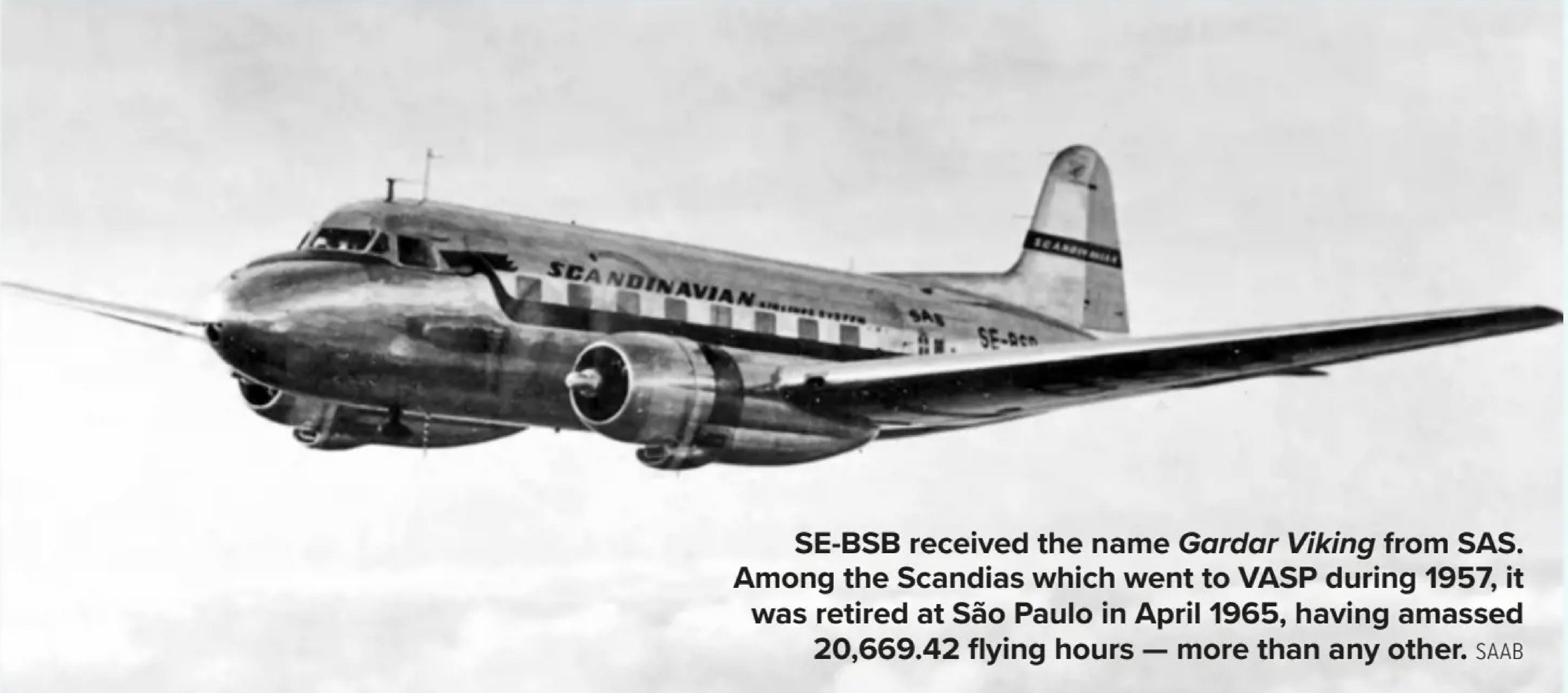
For an aeroplane with such a small production run, the Scandia performed very well

SAS



SE-BSB received the name *Gardar Viking* from SAS. Among the Scandias which went to VASP during 1957, it was retired at São Paulo in April 1965, having amassed 20,669.42 flying hours — more than any other. SAAB

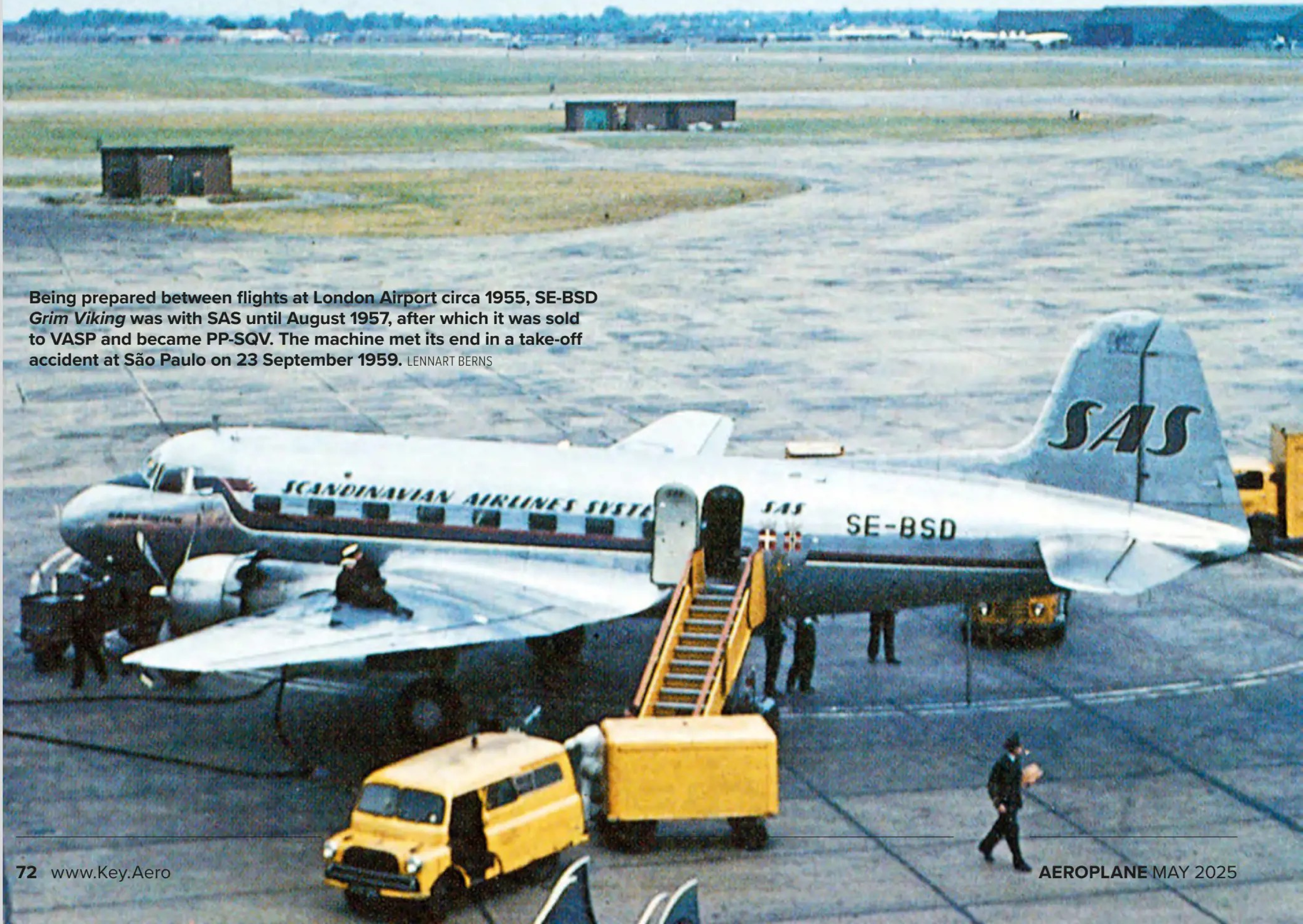
The first Scandia, SE-BSB, was handed over to SAS on 3 October 1950, with the remaining aircraft being delivered over the following five months. To begin with, SE-BSB was used for crew training at Stockholm's Bromma airport. The Scandia maintenance hub was established at Oslo-Fornebu, where all SAS twin-engine aircraft were overhauled.

It was on 20 January 1951 when the Scandia made its inaugural regular SAS flight, on the Oslo-Gothenburg-Copenhagen route. This schedule was expanded to twice daily from 12 February. By 1 May, all six machines had been delivered. The Oslo-Gothenburg-Copenhagen, Helsinki-Copenhagen, Copenhagen-Amsterdam-Brussels and Oslo-Stockholm routes were being flown once a day, and Stockholm-Helsinki twice daily. The type was used on the Oslo-Trondheim-Bodø 'Midnight Sun' service in the summer of 1951, replacing DNL's Short Sandringham flying boats, with six flights per week. Norwegian pilots thought highly of the Scandia, considering it highly suitable for the short runways in northern Norway.

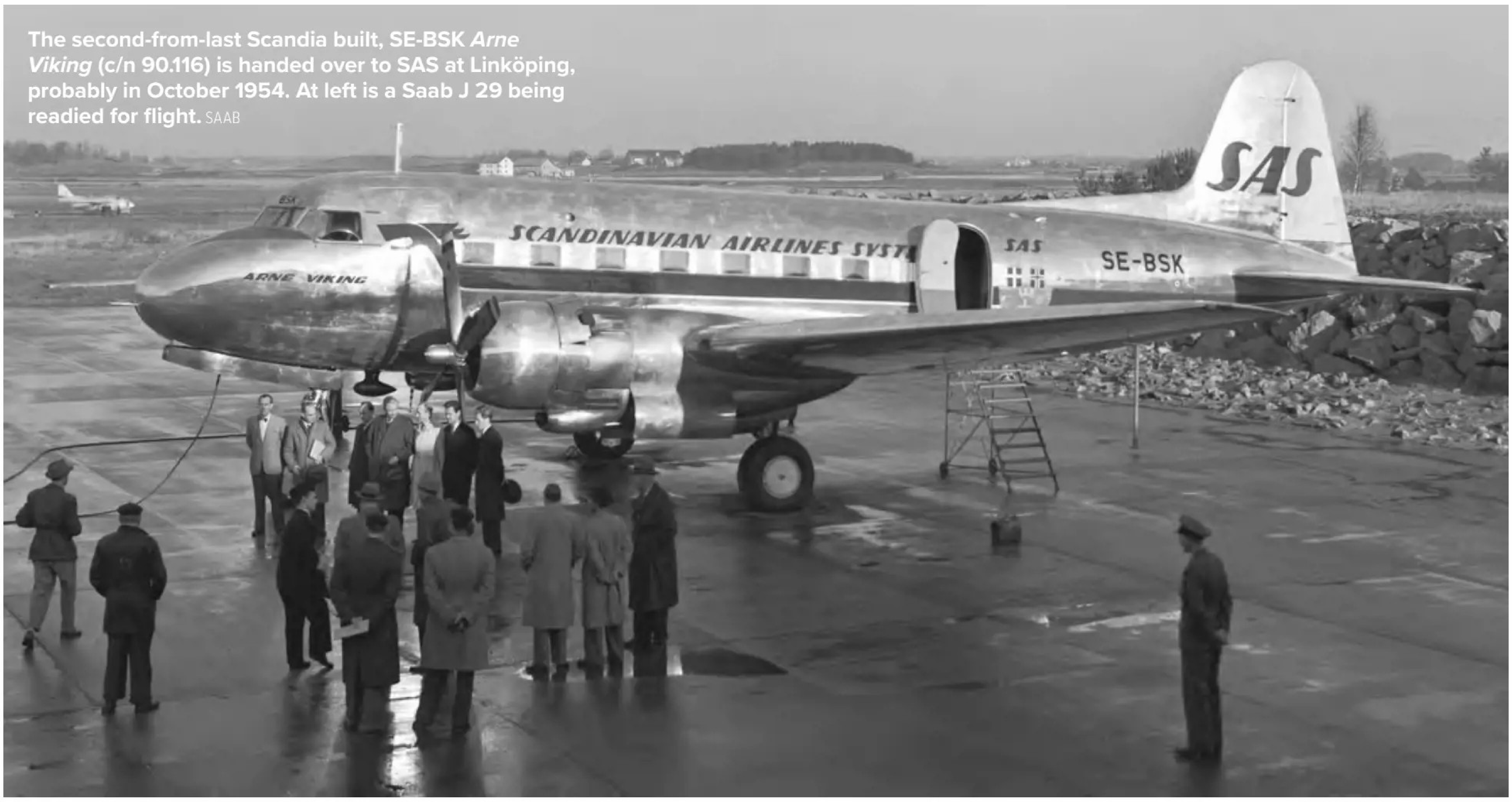
In SAS service, the Scandia offered a 36 per cent cost reduction compared with the DC-3. Initially, four of the aeroplanes were configured with 24 passenger seats, the remaining two having 32 seats in a 'high-density' configuration, each boasting a reading lamp and a fresh air vent. The toilet had the luxury of both hot and cold water. The Scandia proved very popular, both with crews and passengers. During the opening summer of operations, the Scandia fleet had a 65.3 per cent cabin load factor, each aircraft being flown for an average of five hours a day.

The Malmö-Stockholm-Luleå route began to be served by the Saab type on 4 October 1953, with a night-time Amsterdam flight being established on 15 May 1954. Following lengthy negotiations, a Stockholm-Riga-Moscow-Riga-Copenhagen service was instituted on 9 May 1956. Due to a Soviet ban on western-built — in other words, American — airliners being used on Soviet routes, the Scandia was pressed into use.

One notable incident involving an SAS Scandia took place on 9 August 1956. During



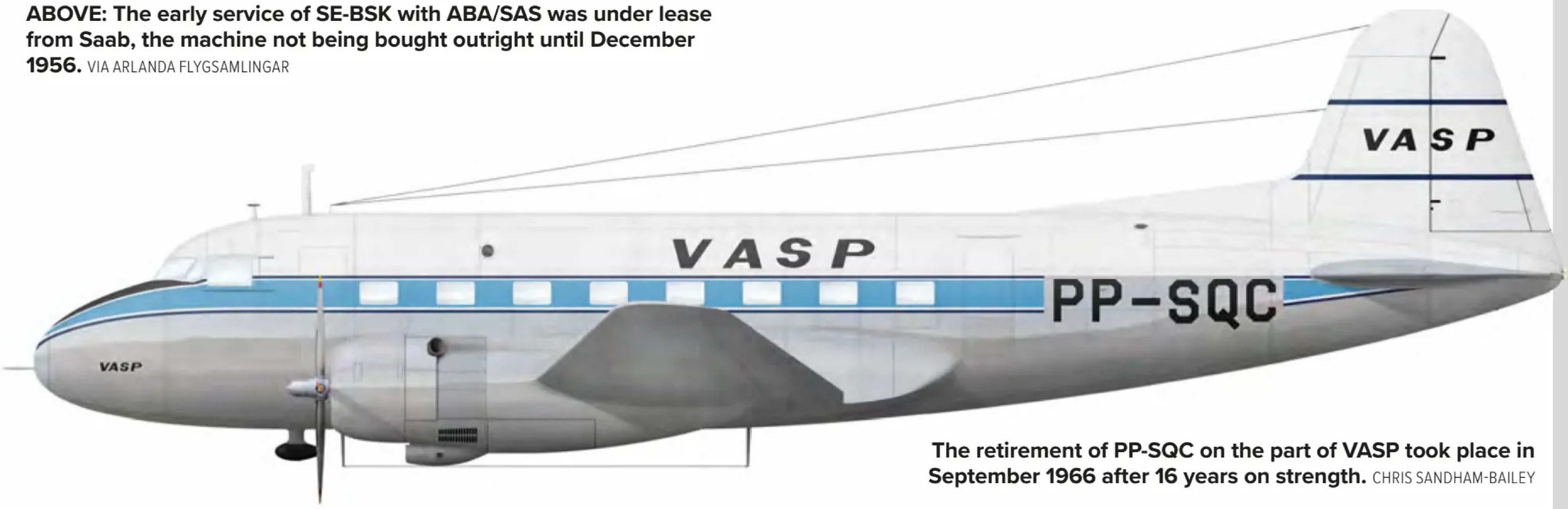
Being prepared between flights at London Airport circa 1955, SE-BSD *Grim Viking* was with SAS until August 1957, after which it was sold to VASP and became PP-SQV. The machine met its end in a take-off accident at São Paulo on 23 September 1959. LENNART BERNS


The second-from-last Scandia built, SE-BSK *Arne Viking* (c/n 90.116) is handed over to SAS at Linköping, probably in October 1954. At left is a Saab J 29 being readied for flight. SAAB

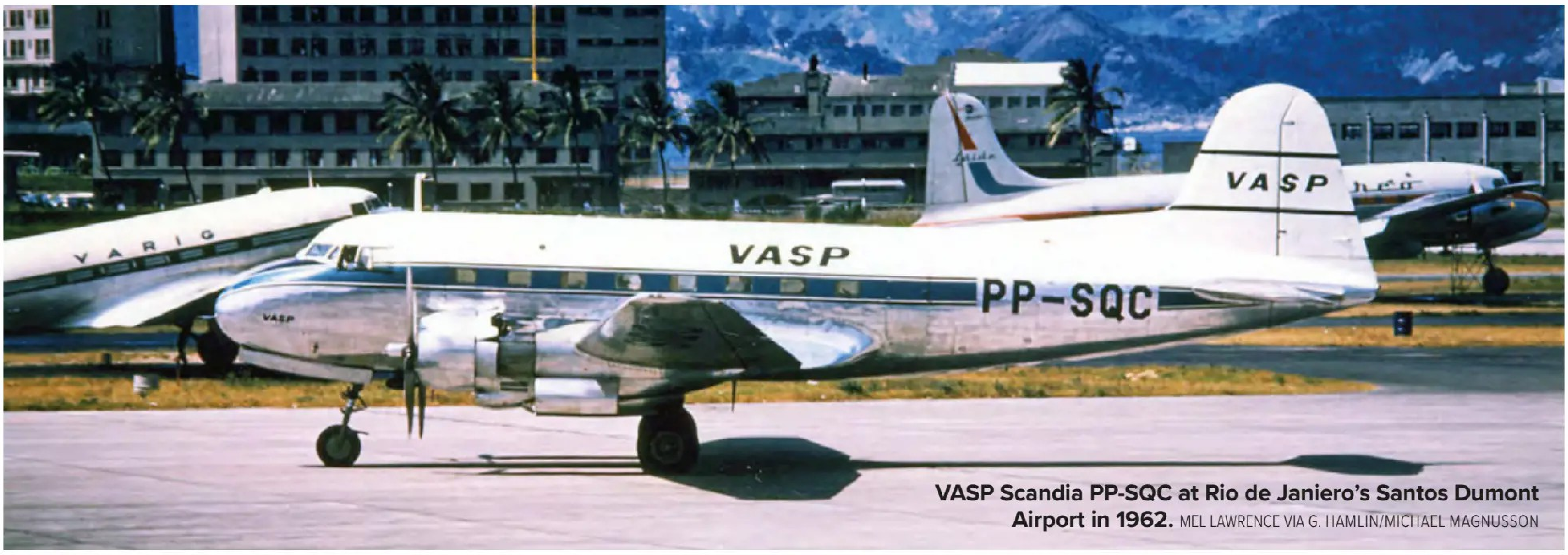
ABOVE: The early service of SE-BSK with ABA/SAS was under lease from Saab, the machine not being bought outright until December 1956. VIA ARLANDA FLYGSAMLINGAR

an approach to Kalixfors, the captain noticed problems with the undercarriage indicator light. The accompanying technician believed the gear was down and locked. On landing, the undercarriage warning signal blared and the captain opened up the throttles for a go-around. Instinctively, the wheels were retracted. But the speed had decreased so much that the Scandia settled onto the runway with the gear only partly retracted. According to contemporary newspaper reports, the passengers “did not notice anything strange during the landing”!

The last Scandia flight in SAS service occurred in February 1958. All of the aircraft were sold to VASP.



The retirement of PP-SQC on the part of VASP took place in September 1966 after 16 years on strength. CHRIS SANDHAM-BAILEY


VASP Scandia PP-SQC at Rio de Janiero's Santos Dumont Airport in 1962. MEL LAWRENCE VIA G. HAMLIN/MICHAEL MAGNUSSON

Brazil

Following the successful demonstrations in Brazil, Aerovias Brasil and subsequently VASP placed orders for the Scandia. Although the first examples arrived in Brazil during June 1950, it was not until 1 July 1951 that they began to operate on the São Paulo-Rio de Janeiro service, flying nine times daily. This was later dubbed the 'Road of Reliability', referring to the Scandia's excellent flight and safety characteristics. On 1 December, the VASP Scandias started flying the Rio-São Paulo-Curitiba route.

VASP was very happy with its Scandias, an additional four being ordered in 1952. These, as well as the final two SAS aircraft, were assembled in the Netherlands. It was reported that five Scandias could do the same job as 11 DC-3s. Interestingly, in 1957 a Scandia was the first airliner to land in the new Brazilian capital Brasilia.

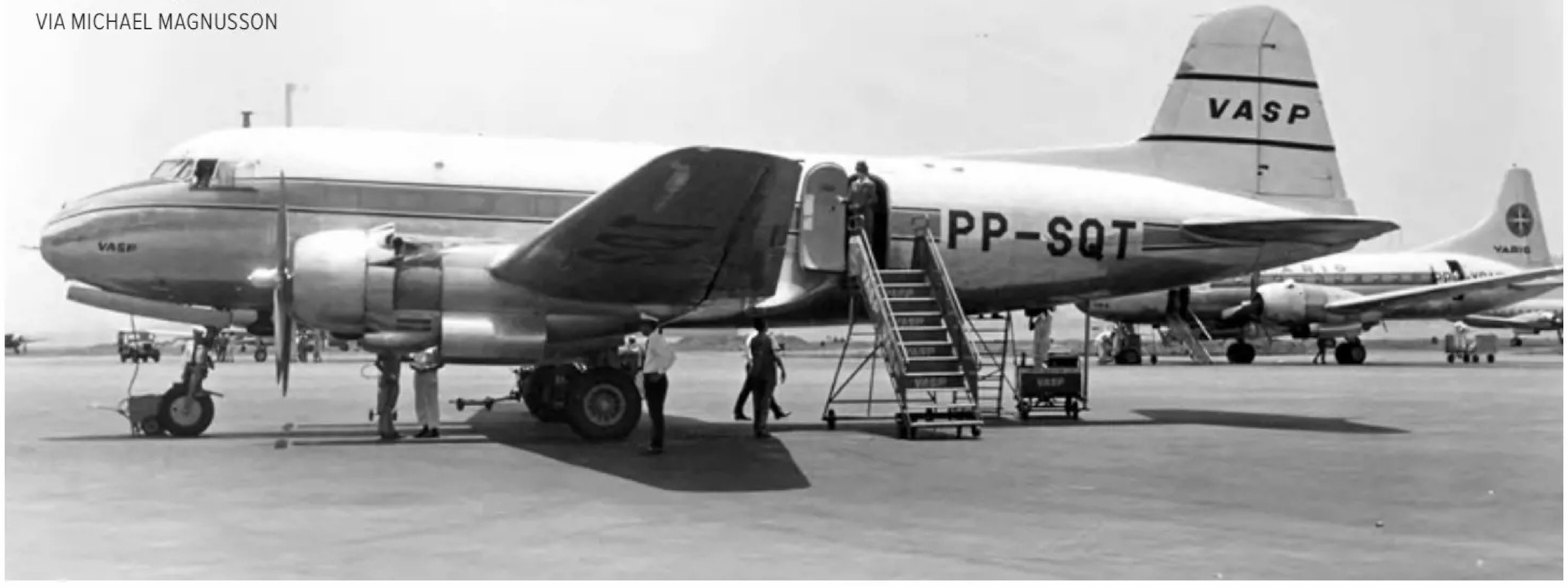
Although the type enjoyed a good safety record with VASP, accidents did occur. The first fatal crash was 30 December 1958, when PP-SQE went down into Guanabara Bay shortly after take-off from Santos Dumont Airport. Of 37 crew and passengers, there were 16 survivors. PP-SQV was lost on 23 September 1959; after failing to gain altitude following take-off from São Paulo-Congonhas, the Scandia crashed 4.5km south of the airport. All 20 aboard died.

A fire broke out in the forward cargo compartment of PP-SQS following take-off from São Paulo-Viracopos on 15 August 1960 and the captain decided not to activate the extinguisher system, presuming the fumes would enter the cockpit and reduce the already poor visibility. Returning to Viracopos, an emergency landing was made. Although there were no fatalities, the Scandia was damaged beyond economical repair.

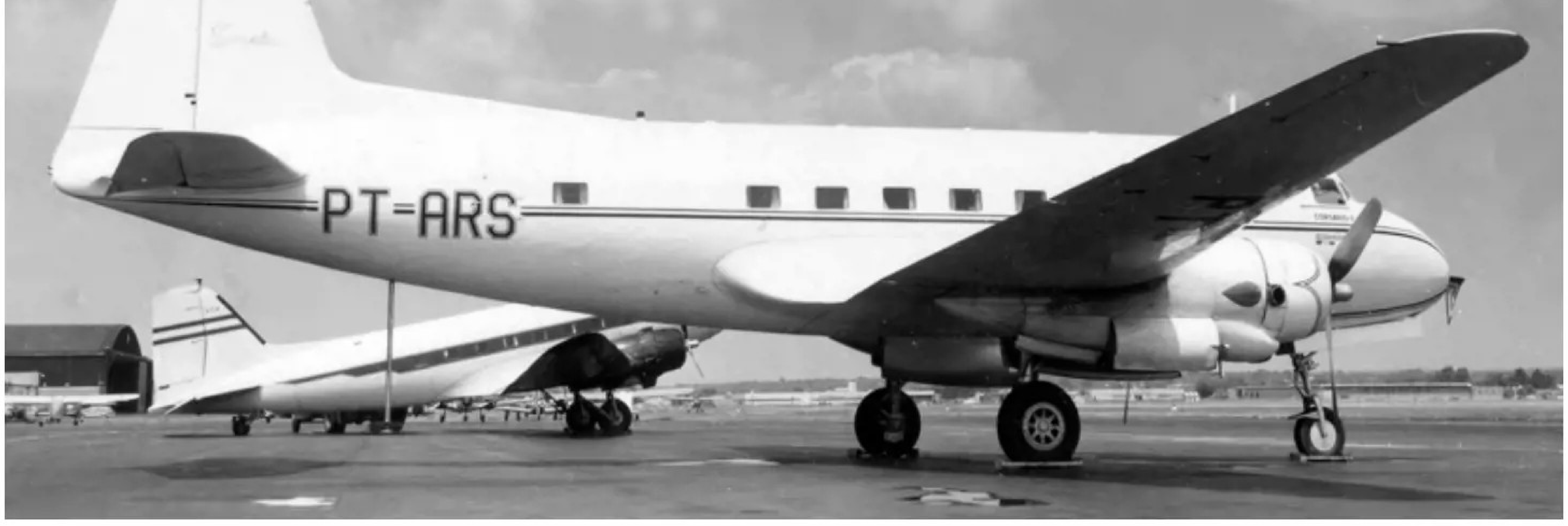
The type's last fatal accident took place on 26 November 1962, when PP-SRA collided in mid-air with a Cessna 310, PT-BRQ, after take-off from Congonhas. The airliner's 23 occupants lost their lives, as did four people on the Cessna. During a training flight on 8 March 1964, PP-SQY was damaged beyond repair in a heavy landing at Londrina.

A dozen Scandias remained in VASP service by 1965. Nine were offered for sale, but no prospective buyers emerged. The writing was on the wall, and the final Scandia flight took place on 24 July 1969. Thankfully that example, PP-SQR, has been preserved.

PP-SQT was among the airframes built new for VASP. The Varig Convair CV-440 in the background provides an interesting comparison with one of the Scandia's main rivals. VIA MICHAEL MAGNUSSON



The Scandia prototype enjoyed a long career, being registered as PT-ARS when sold to Dirceu Castro Fontoura for executive use. Photographed at Teterboro, New Jersey on 21 June 1959, its certificate of airworthiness lapsed in July 1964 and the aeroplane was stored at Marte. Plans to convert it into a nightclub having been abandoned, it was scrapped in November 1970. ROBERT T. ODELL VIA GARY KUHN/MICHAEL MAGNUSSON



The relatively few pilots who flew the Scandia tended to have a positive impression

From the outset of flight-testing with SE-BCA, the Scandia exhibited good handling qualities. VIA MICHAEL MAGNUSSON

Thanks to Lennart Berns, Mikael Forslund, Tord Jonsson, Juha Klemettinen, Michael Magnusson, Rob Mulder and Kenneth Nilsson.

In retrospect, the Saab 90 Scandia was an excellent aircraft, well suited as a short- and medium-range airliner. However, by the time it was ready for production it had already been surpassed by other, contemporary aeroplanes, particularly the Convair CV-240 and its developments.

Information about flying the Scandia is scant, but in a 1999 interview with aviation historian and former Saab employee Michael Magnusson, VASP pilot Abel Pereira Leite provided some background. Generally speaking, the Scandia exhibited good flying characteristics. The cockpit was spacious compared to the Vickers Viscount, with the Scandia being light on the rudder, albeit a bit nose-heavy and usually requiring a bit of ballast in the rear fuselage. The engine water injection could cause trouble — the cockpit windows were often covered in moisture, reducing visibility.

The lever that operated the tail support strut was located close to the throttles. This often meant that while pushing the throttles forward, one came into contact with the strut lever by mistake, resulting in the strut being lowered and breaking during take-off.

When a series of fatal airliner accidents occurred in Brazil during the 1950s, local newspapers said the best chance of survival was for the passengers to move to the back of the cabin. Pereira Leite once noted a minor engine malfunction after taking off from Santos Dumont Airport. While attending to the issue, he noted in horror that the Scandia was becoming more and more tail-heavy and difficult to control. The tail-heaviness gradually lessened and the steward entered the cockpit to explain what had happened. The passengers had noted the problems and quickly gathered at the rear. Armed with a pistol, the steward convinced them to return to their seats!

In a similar way, Pereira Leite reduced engine rpm too quickly during a night landing at Porto Alegre, resulting in huge flames emanating from the over-wing exhausts. Fearing an accident, the passengers moved aft, shifting the centre of gravity so much the nosewheel lifted off the runway.

Once a foul smell was noted in a Scandia's cabin. After some time, it was recalled that the aircraft had a rarely used forward cargo compartment. When the hatch was opened, inside were three dead chickens. For some reason, they had been put in there and forgotten.

DATAFILE

LAST OF THE FEW

Of 18 Scandias built, only one has survived, in Brazil. In 1975, PP-SQR (c/n 90.115) was donated to the Museu de Armas e Veículos e Avioes Motorizados Antigos (Museum of Weapons, Vehicles and Machines) in Bebedouro. Having been on outdoor display for 40 years, the Scandia is in less-than-perfect condition. Saab made an unsuccessful attempt to return it to Sweden in 1987, and subsequent efforts have failed. The Scandia is the sole type of aircraft designed by Saab not to be represented in a Swedish aviation museum.

PP-SQR on show at the Museu de Armas e Veículos e Avioes Motorizados Antigos in Bebedouro, near São Paulo. MARCO AURÉLIO ESPARZA

Reviews

REVIEWS RATING

★★★★★ Outstanding
★★★★☆ Excellent
★★★☆☆ Good
★★☆☆☆ Flawed
★☆☆☆☆ Mediocre
Enough said

The latest books and products for the discerning aviation enthusiast

BOOK of the MONTH

Fokker F.XX

by Rob J. M. Mulder
published by European Airlines

With 184 A4-sized pages, you might think this new European Airlines title covers a type that enjoyed a decent production run. Not so. Just one Fokker F.XX was built, rendering it ripe for inclusion in the publisher's series 'The Few', examining airliners manufactured in small numbers. But it had a fascinating career nonetheless, starting with KLM, its intended customer. When the new tri-motor proved unsuitable, the prototype plied European services from 1933-36 until it passed to Spanish carrier Líneas Aéreas Postales Españolas. Painted in camouflage, it ended up being written off during the civil war.

Given the F.XX's status as a one-off, there is definitely the feeling of no stone having been left unturned in the text, which makes copious use of period reports. And the same goes for the photos; I doubt there's a shot of the type that's not in here. Some are delightful, like one showing the infant daughter of Dutch composer Dr Rudolph Mengelberg standing on one of the aircraft's chocks, or a beautiful image — used across a double-page spread — of the machine making a low pass over Berlin-Tempelhof. There's a colour cutaway, spreads of cigarette cards and postal covers featuring the F.XX, colour profiles and a beautiful illustration by Ronnie Olsthoorn showing the aeroplane during its time with LAPE. Two pages are even devoted to a large-scale flying F.XX model. Utterly comprehensive, very impressive.

Ben Dunnell

ISBN 978-82-93450-35-1; 12 x 8.5in hardback; 184 pages, illustrated; **NOK 449.00** *from www.europeanairlines.no*

★★★★

FOKKER F.XX
Fokker's Fastest Trimotor
THE FEW
Rob J. M. Mulder

B-29 Superfortress vs Japanese Nightfighter

by Mark Lardas
published by Osprey

B-29 SUPERFORTRESS VS JAPANESE NIGHTFIGHTER
Japan 1944–45
MARK LARDAS

This volume is not per se a record of the USAAF's strategic bombing campaign against Japan. Rather, it examines the combatants, the tactics and the weaponry that pitted B-29s against Japanese night fighters, in raids that got into their stride during March 1945 when the Superfortresses switched to low-level bombing with incendiaries.

The examination is intelligent, wide-ranging and engrossing. The section 'Theory of nightfighter interception' reveals Japanese signal intelligence picked up pre-mission radio checks by B-29 crews, to give their fighter aircrew as much as five hours' warning of an upcoming raid. Illustrations are to the usual Osprey standard — thus, very good. As well as contemporary black-and-white photos including, on page 50, a wonderful landing shot of a glinting 314th Bomb Wing B-29 at Guam, there are numerous pieces of colour artwork. One such shows the arrangement of the two obliquely mounted 20mm guns in the cockpit of a Ki-45 Toryu, installed behind the pilot and in front of the observer/gunner. Ear defenders surely recommended.

Denis J. Calvert

ISBN 978-1-4728-6560-1; 9.8 x 7.3in softback; 80 pages, illustrated; **£15.99**

★★★

WATCHES

Dédale WP-01

Based in Toulouse, long-time spiritual home of so much of France's aviation industry, new watch company Dédale — French for Daedalus — is launching its first models via a Kickstarter campaign on 18 April. There are three versions of the WP-01: the Alfa Zulu, recalling "the pioneers and the golden age of aeronautical watchmaking"; the November, a more "timeless" design; and the Papa, shown here with an optional stainless steel bracelet, inspired by aircraft instruments. All are limited editions being produced to 150 copies.

Prices: **€1,083.40** *for Kickstarter supporters, otherwise* **€1,417**

Information and ordering: www.dedale-watch.com

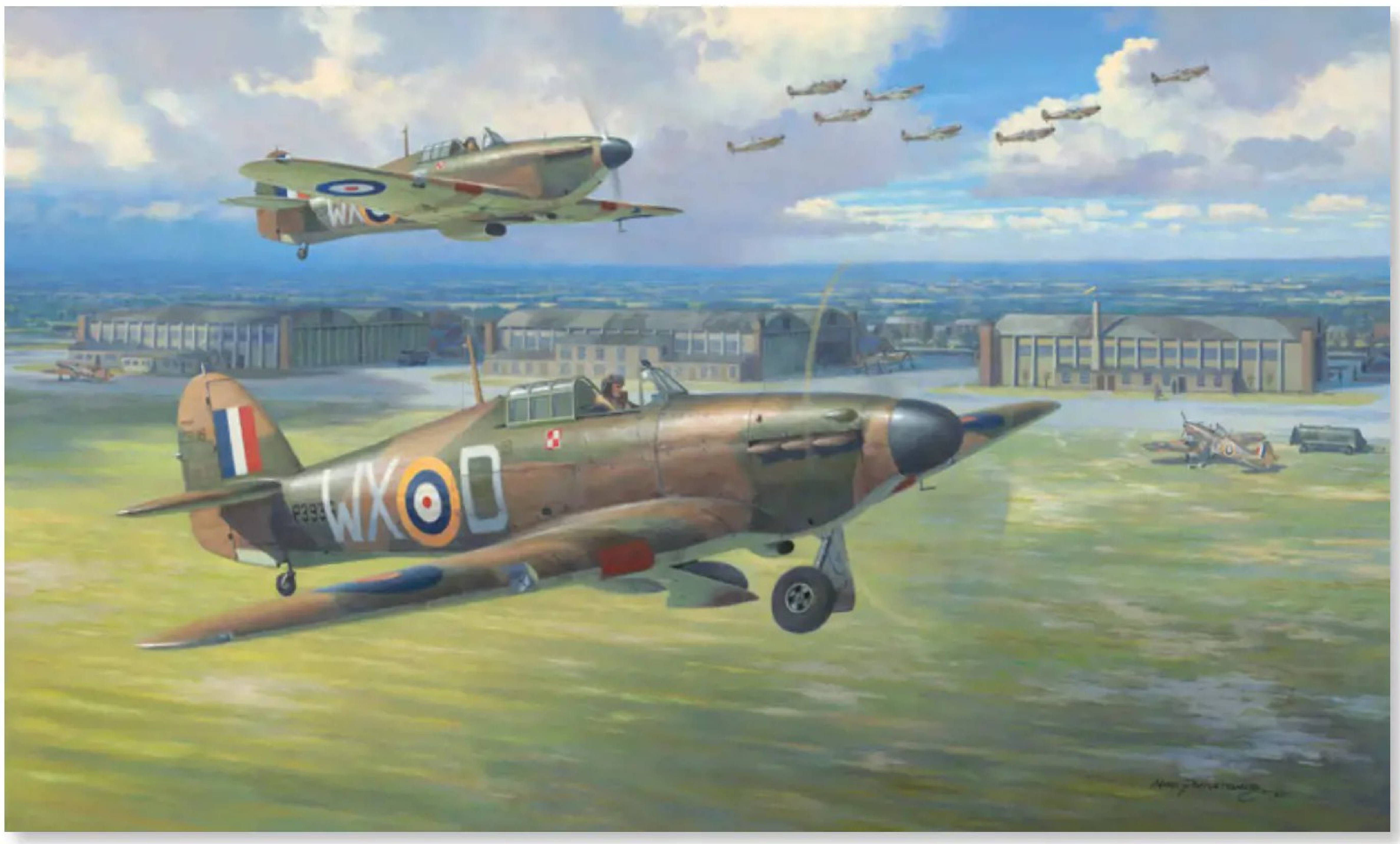
WIN! A LIMITED EDITION POLISH HERITAGE FLIGHT PRINT

WORTH £100!

Aeroplane **has teamed up with *polishheritageflight.com* to give one lucky reader the chance to win the new limited edition print 'Pamięć Bohaterom' (Remember the Heroes), specially produced by renowned aviation artist Mark Postlethwaite.**

POLISH
HERITAGE
FLIGHT

The Polish Heritage Flight is looking forward this summer to mounting its Duxford to Dęblin flight: taking the Historic Aircraft Collection's Hurricane to Poland. In partnership with the Polish Air Force Memorial Committee, this very special deployment will salute the Battle of Britain's 85th anniversary and the Polish Air Force University's centenary. Even better, the Hurricane wears the markings of No 302 'City of Poznan' Squadron, which was based at RAF Duxford in September 1940.



To carry out this exceptional commemoration, the Polish Heritage Flight is raising funds, not least through a JustGiving campaign and the sale of exclusive merchandise. Visit **polishheritageflight.com** for the donation and purchase links.

We're most grateful to the Polish Heritage Flight for providing as a competition prize the new limited edition print 'Pamięć Bohaterom' (Remember the Heroes), specially produced by renowned aviation artist Mark Postlethwaite. It shows No 302 Squadron Hurricanes scrambling from Duxford on Battle of Britain Day, 15 September 1940. P3935/WX-D is being flown by Sgt Julian Kowalski and P9254/WX-E by Flt Lt Tadeusz Chłopik, who was killed when his parachute failed to open over Essex. These two aeroplanes are represented by the different sides of the Hurricane that will fly to Poland.

To enter, scan the QR code to visit www.key.aero/competitions and fill in the online competition entry form.

Closing Date: 17th July 2025. *Winners notified* ***28th July 2025.*** *No purchase necessary. There is no cash prize alternative and the Editor's decision is final. The competition is not open to employees of Key Publishing or their families. The promoter is neither responsible nor liable,for any change in value of a prize occurring between publishing date and the date the prize is claimed. Key Publishing will not be liable for any prizes which are lost, delayed, or damaged in the post for reasons beyond Key Publishing's control. Unless expressly stated for a particular promotion, promotions are restricted to entrants aged 18 years or over. If you are under 18 years of age, please ask a parent or guardian to enter their details on your behalf. Proof of eligibility must be provided on request. Only one entry per person is permitted. This competition is subject to the laws of England and Wales, any claims will be regulated by the courts of England and Wales.*

Want to know more? Visit **www.polishheritageflight.com**

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BRITAIN'S BEST-SELLING MILITARY MONTHLY
BRITAIN AT WAR
24 SPITFIRES OVER LE MANS
BREN BRILLIANCE

Victory in the Air 80 years on
May 2025 issue on FlyPast looks back at one of the most significant events in European history – VE Day. While it did not mark the end of hostilities overall, that significant date, 80 years ago, will always be saluted on both air and ground, as will the sacrifice and hardships endured by so many. Our cover star is 'Damn Yankee', a Mustang warbird proudly flying today in 'invasion stripes'.

Unstoppable Marauder
Following one Martin B-26 Marauder's astonishing survival in war-torn skies, a project is afoot to restore this famous warrior, dubbed 'Flak-Bait'

Supermarine Swift
It may have been overlooked in comparison to the more successful Hawker Hunter, but how good was the Swift in reality?

Italian Showdown
With the end of World War Two in sight, climactic air combats during the last days of the Italian campaign are described by Thomas McKelvey Cleaver

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Spring 2025 issue of Pilot magazine showcases an opportunity to take a virtual flight in the mighty Vulcan. A Stockport-based operator is offering paying customers a unique simulator experience, with the help of a team of experienced instructors, a decade after the Cold War V-bomber's final flight. **Also inside,** have you ever heard of Avions Philippe Moniot or the Simba? When you learn of the new four-seat aircraft's heritage, impressive load-carrying capacity and performance you'll realise these are names you should know better… **Meanwhile, in Cockpit Report,** a past owner and display pilot revisits the classic, German-designed 1930s aerobatic trainer - CASA/Bücker Jungmann - and finds it every bit as impressive as he remembered.

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The VC exploits of World War One's most daring submariner and the Royal Navy's youngest captain

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408/25

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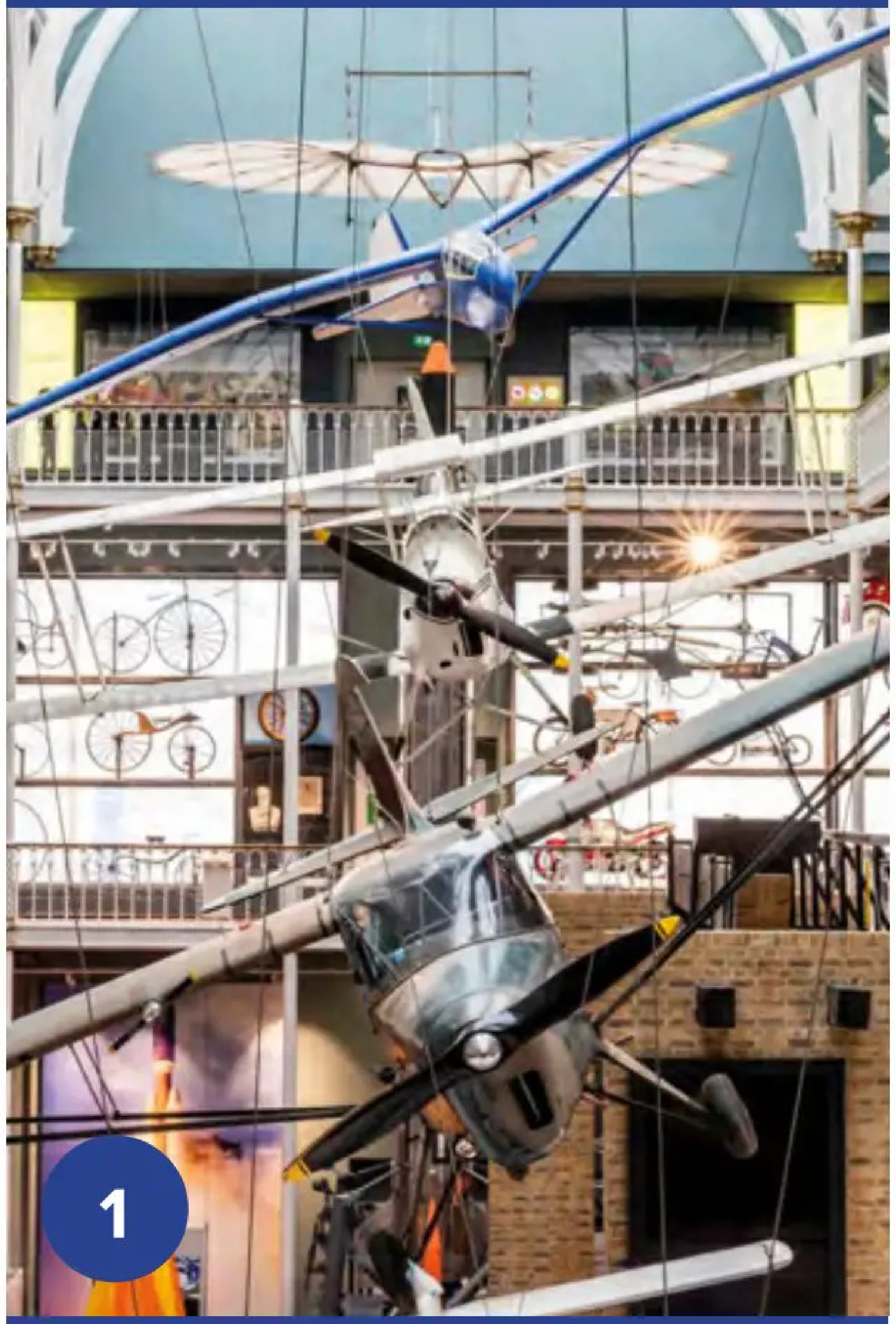
DAYS AT THE MUSEUM

Head around the country to discover the best Britain's aviation museums have to offer

COMPILER: BEN DUNNELL

The Yorkshire Air Museum's Mirage IVP: the only one of its kind in the UK. KEY/JAMIE EWAN

Among the aircraft in the National Museum of Scotland are, from top to bottom, the Pilcher Hawk, Slingsby Gull, Tiger Moth and Beagle Terrier. NMS



Scotland

If your trip is concentrated around the Edinburgh area, the **National Museum of Scotland** in the city centre provides a good starting-point, featuring several light aeroplanes with strong Scottish connections — and a great deal else, of course. Out into the beautiful, nearby countryside of East Lothian, the **National Museum of Flight** at East Fortune is the country's premier aviation collection, the prominence given to civilian types being very welcome. Some way up the east coast, check out the Anson restoration and recently arrived Jaguar at the **Montrose Air Station Museum**, located at the site of Britain's first operational air station, founded in February 1913. In the Highlands, at the former RAF Kinloss, **Morayvia** has constantly been building up its collection; as mentioned in the news pages, a Tornado is new there. And the **Dumfries and Galloway Aviation Museum**, which took on a Jaguar and Lynx late last year, is fundraising towards an expansion of its indoor display areas.

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www.nms.ac.uk/national-museum-of-scotland
www.nms.ac.uk/national-museum-of-flight
rafmontrose.org.uk
www.morayvia.org.uk
www.dumfriesaviationmuseum.com

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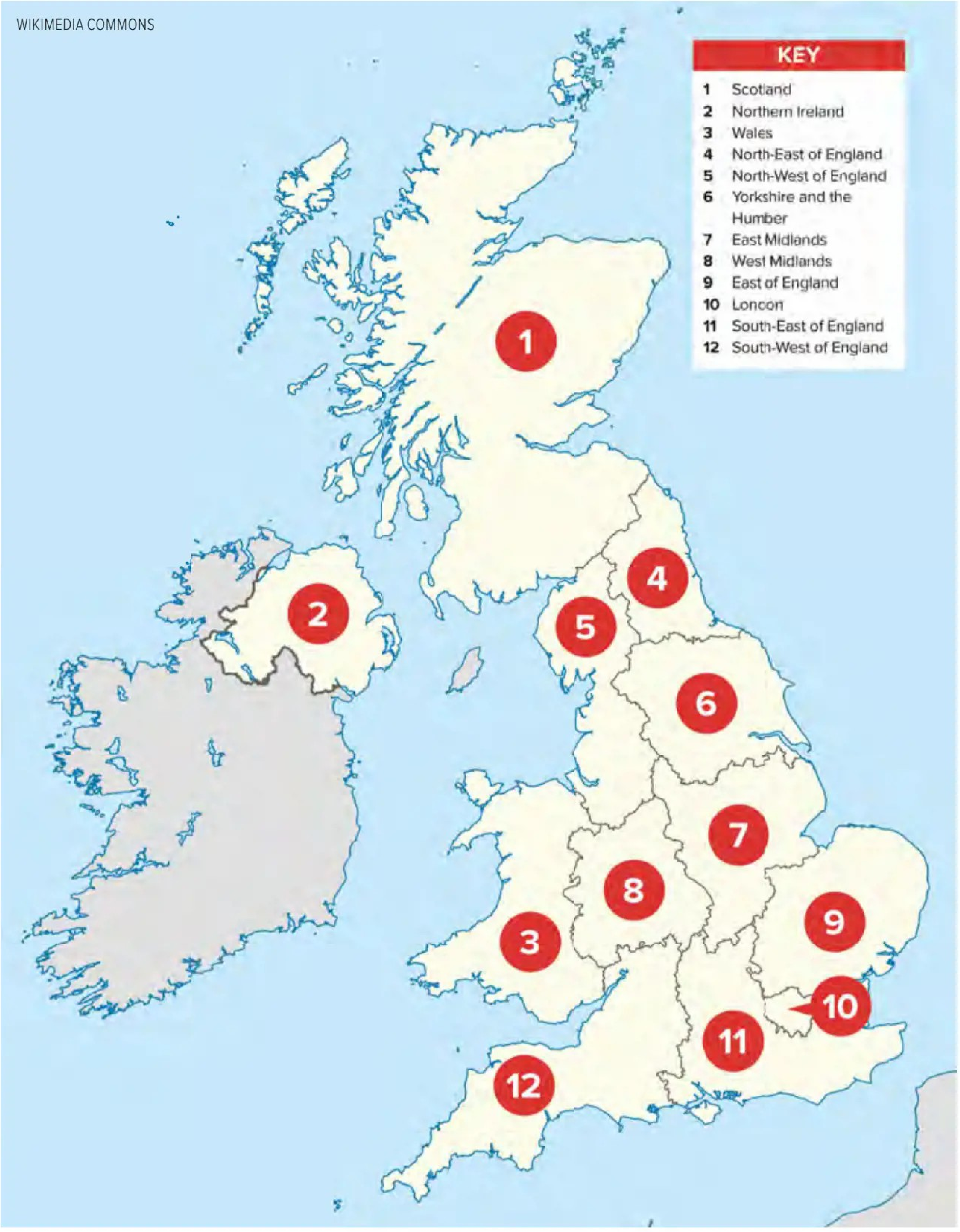
KEY
1 Scotland
2 Northern Ireland
3 Wales
4 North-East of England
5 North-West of England
6 Yorkshire and the Humber
7 East Midlands
8 West Midlands
9 East of England
10 London
11 South-East of England
12 South-West of England
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The Dumfries and Galloway Aviation Museum's modified Meteor T7, WL375, in front of its Lightning F53. DGAM

Northern Ireland

The **Ulster Aviation Society** collection at Long Kesh — next to the former Maze Prison — goes from strength to strength. Tucano ZF378, painted as a No 72 Squadron Spitfire named *Enniskillen* for air display work, arrived last autumn and is freshly reassembled, while its Gannet restoration nears completion. To visit you must arrange a tour, rather than just turning up. The **Ulster Transport Museum** in Holywood should also be on your agenda; both are easy to reach by road from Belfast.

www.ulsteraviationsociety.org
www.ulstertransportmuseum.org

ABOVE: Phantom FG1 XT864 resplendent with the Ulster Aviation Society. UAS

Gnat XP534 heads Buccaneer XX889 and Jet Provost XW420 at the South Wales Aviation Museum, framed by the truncated wing of Shackleton WR974. SWAM

Wales

The **South Wales Aviation Museum** at St Athan continues to acquire a large number of post-war aircraft that go under-represented elsewhere. Varsity WJ945, a prime example, arrived last year but remains to be reassembled. The hugely picturesque environs of Pembrokeshire contain the **Pembroke Dock Heritage Centre**, which details the town's famous former RAF flying boat base. And in north Wales there's the hard-working **Airworld Aviation Museum** at Caernarfon Airport.

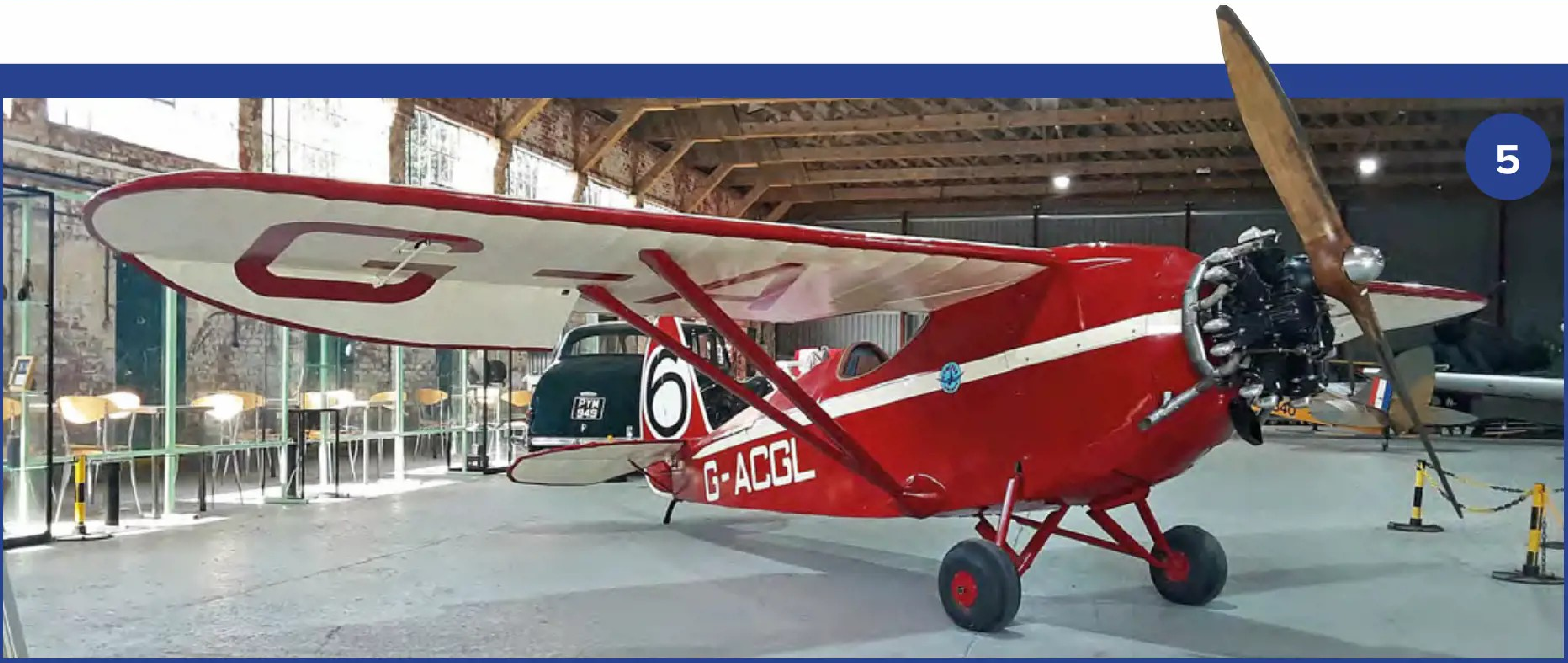
www.southwalesaviationmuseum.com
www.sunderlandtrust.com
www.airworldmuseum.com

Ex-No 100 Squadron Hawk T1 XX265 newly arrived at Sunderland. NELSAM

North-East of England

Such a large region, but, incredibly, just one 'formal' aviation museum: NELSAM, the **North-East Land, Sea and Air Museum** in Sunderland, adjacent to the Nissan factory on the old RAF Usworth. Hawk XX265 became its latest exhibit last May.

www.nelsam.org.uk



North-West of England

I was charmed when I first visited the **Hooton Park Hangars** in Ellesmere Port, such a splendid job has been done of turning these historic buildings into a museum. The arrival from the RAF Museum of the Comper Swift, a type intimately linked with the site, was testament to those efforts. Access is on specific open days only. The **Avro Heritage Museum** on the old Woodford airfield site is impressive enough as it is, but when the Avro 707C and Shackleton go on public display it'll take another leap forward. Not a million miles away is Manchester Airport's **Runway Visitor Park**, headlined by Concorde G-BOAC. And any trip to the Lake District should take in the **Solway Aviation Museum** at Carlisle Airport, especially to see Beverley XB259 going back together.

hootonparkhangars.co.uk
www.avroheritagemuseum.co.uk
www.runwayvisitorpark.co.uk
www.solway-aviation-museum.co.uk

ABOVE: Comper Swift G-ACGL displayed at Hooton Park, where the type was built. HOOTON PARK TRUST

Yorkshire and the Humber

The **Yorkshire Air Museum** at Elvington sets a high standard and has a very choice collection; the Tucano should be complete by the time you read this, and you can examine progress on the Lightning F6 and Meteor NF14 restorations. We'll feature the Shackleton next month. Why not schedule your visit to coincide with a special event, like the engine-running Thunder Day on 13 July? Over in Doncaster, the wide-ranging **South Yorkshire Aircraft Museum** has one of the largest collections to be found on show anywhere, including a full array of trainer types operated from nearby RAF Finningley, finished off in November with a Tucano.

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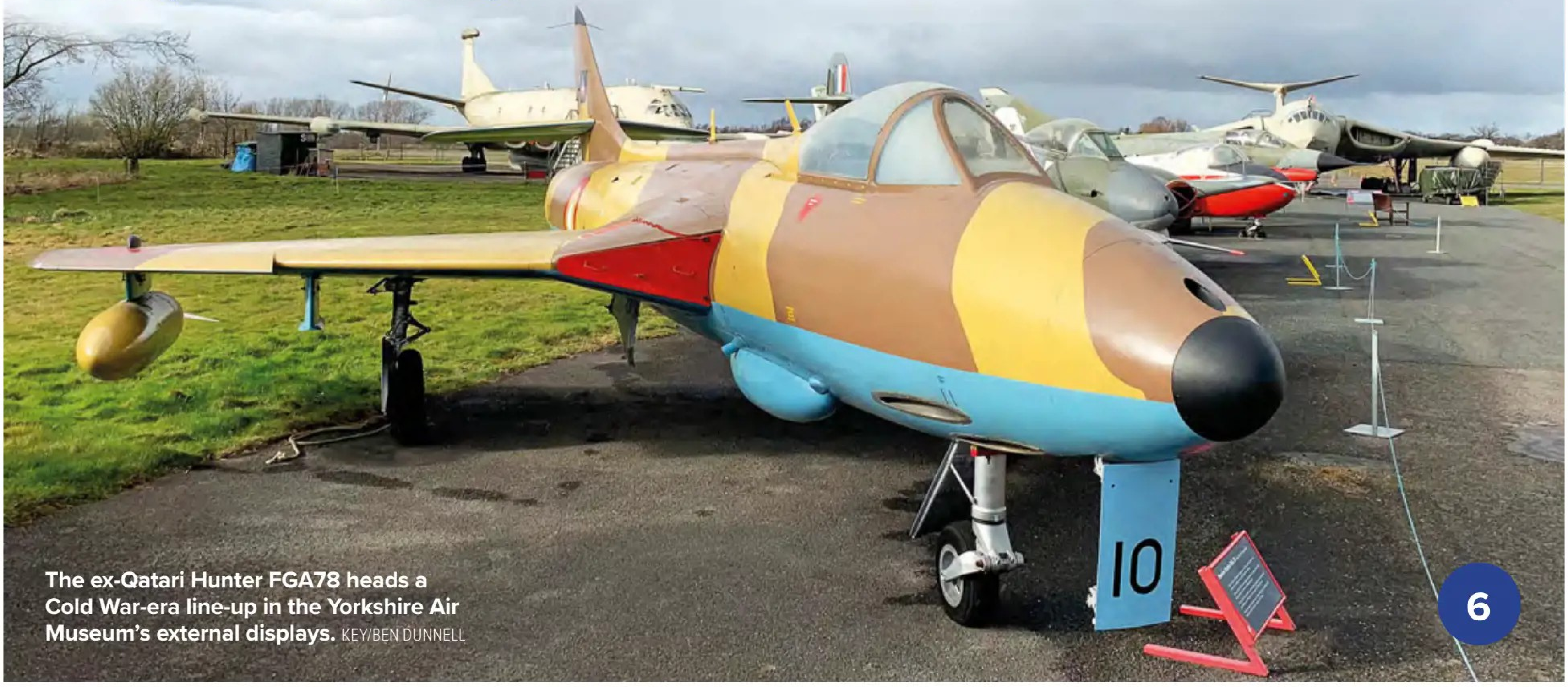
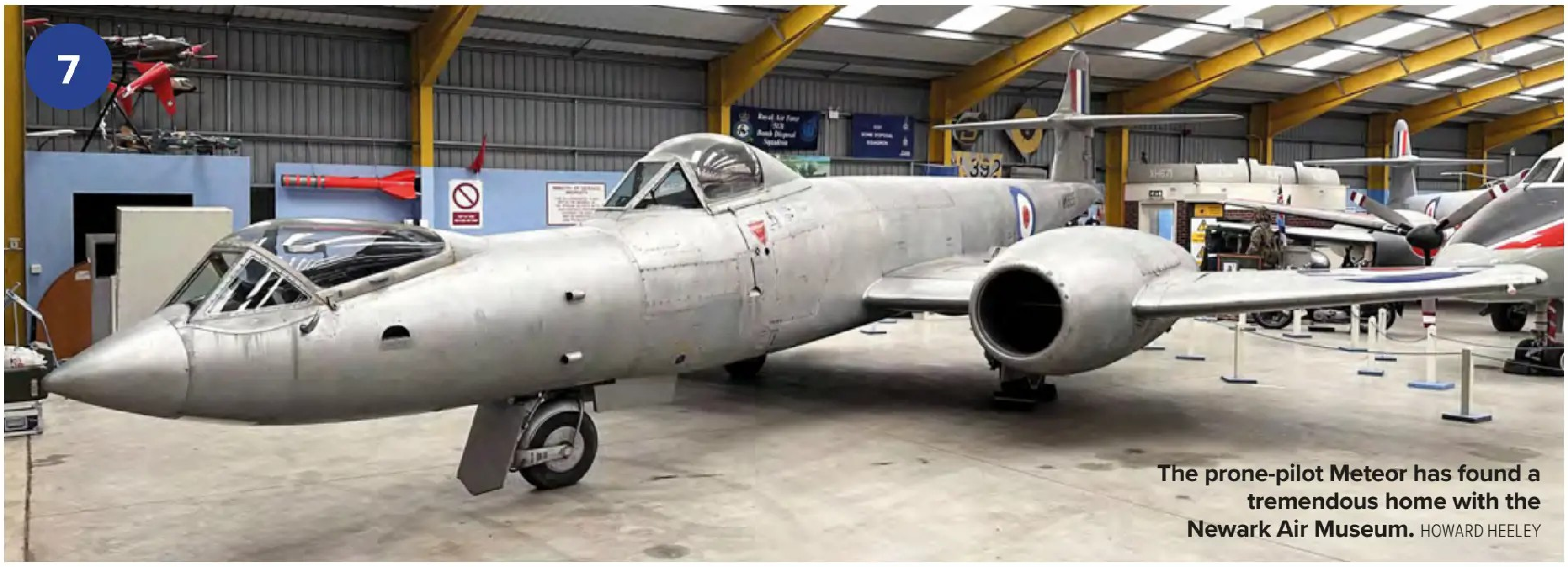
yorkshireairmuseum.org
www.southyorkshireaircraftmuseum.org.uk



The ex-Qatari Hunter FGA78 heads a Cold War-era line-up in the Yorkshire Air Museum's external displays. KEY/BEN DUNNELL



The prone-pilot Meteor has found a tremendous home with the Newark Air Museum. HOWARD HEELEY

East Midlands

If one single county demands a dedicated visit by the enthusiast to take in the memorials, heritage and visitors' centres and museums recalling local RAF history, it's Lincolnshire. Perhaps the jewel in its crown is East Kirkby's **Lincolnshire Aviation Heritage Centre**, with taxiable Lancaster and Mosquito, with B-25, Bolingbroke and Hampden projects, and the most dignified, poignant commemorative ambience. Regular events throughout the year, too. In Nottinghamshire, the absolutely outstanding **Newark Air Museum** should be on everyone's list, particularly since it now displays two prone-pilot research aircraft, the Desford and Meteor — fantastic! At East Midlands Airport, the ever-improving **East Midlands Aeropark** hopes to embark on the addition of new visitor facilities, and is deserving of support to that end.

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www.lincsaviation.co.uk
www.newarkairmuseum.org
www.eastmidlandsaeropark.org

The Fairey Delta FD2, TSR2 and BAe EAP at Cosford. KEY/BEN DUNNELL

West Midlands

Big change is afoot for the **RAF Museum Midlands** at Cosford, with a transformation programme set to last until 2027. While the diminution of the unique flight test aircraft collection is a great shame, there's still a huge amount to see there, and it's easy to visit by train, too. What it lacks in size, the **Tettenhall Transport Heritage Centre** in Wolverhampton makes up for with enthusiasm, and its range of Boulton-Paul-related exhibits. The **Midland Air Museum** at Coventry Airport holds several aircraft you won't see anywhere else, and while British jets are a focus through the local Frank Whittle connection, the Flettner Fl 282 helicopter is an incredible sight after its recent restoration. South of Worcester, the **RAF Defford Museum** — whose home is Croome Court, a National Trust property — details this airfield's clandestine past.

www.rafmuseum.org.uk/cosford
www.midlandairmuseum.co.uk
deffordairfieldheritagegroup.wordpress.com/museum

East of England

No introduction, really, is required for **IWM Duxford** — another place in the midst of major change — and **Shuttleworth**. So, let's mention some of the east's other attractions, beginning with the **de Havilland Aircraft Museum** at Salisbury Hall near London Colney, Hertfordshire, where completion of Mosquito FBVI TA122's marathon restoration means the sight of three of the type together is all the more powerful. **Stow Maries Great War Aerodrome** near Maldon, Essex, boasts an atmospheric assembly of 1914-18-era aircraft and buildings, and stages flying displays on Sunday 25 May and Saturday 23 August. In Suffolk there are the **Bentwaters Cold War Museum** — which finished a stunning T-33A restoration last year — and the **Norfolk and Suffolk Aviation Museum** at Flixton; Norfolk's biggest is the **City of Norwich Aviation Museum** at Norwich Airport, while the **Langham Dome** is a true gem. And, again, there are far more heritage centres, memorials and small museums across East Anglia than we have space to mention here, but which add up to a rich historical tapestry. Seek them out and support them.

9
U.S. AIR FORCE

What a job the Bentwaters Cold War Museum has done on restoring its T-33A. BCWM

www.iwm.org.uk/visits/iwm-duxford
www.shuttleworth.org
www.dehavillandmuseum.co.uk
www.stowmaries.org.uk
www.bcwm.org.uk
aviationmuseum.net
www.cnam.org.uk
langhamdome.org

London

If you haven't been to the **RAF Museum London** at Hendon recently, perhaps the display of inter-war aeroplanes, bringing together such as the Sopwith Snipe and Bristol Bulldog, gives reason enough; likewise, at the **Science Museum** in South Kensington you can now see the world's fastest all-electric aircraft, the Electroflight NXTE *Spirit of Innovation*. While the aircraft on display there are unchanged, if you want to view the war medal gallery at **IWM London** in Lambeth, you'll have to visit before 1 June when it will close. Into the suburbs, remember to book a visit to one of the **Croydon Airport Heritage Centre**'s open days in advance. The **Bentley Priory Museum** has special resonance in this Battle of Britain 85th anniversary year, as the headquarters of Fighter Command in 1940, and the same goes for the **Battle of Britain Bunker Exhibition and Visitor Centre** in Uxbridge.

www.rafmuseum.org.uk/london
www.sciencemuseum.org.uk
www.iwm.org.uk/visits/iwm-london
www.historiccroydonairport.org.uk
bentleypriorymuseum.org.uk
battleofbritainbunker.co.uk

ABOVE: The legendary Lancaster R5868 'S for Sugar' dominates the RAF Museum London's Bomber Command hall. KEY/BEN DUNNELL

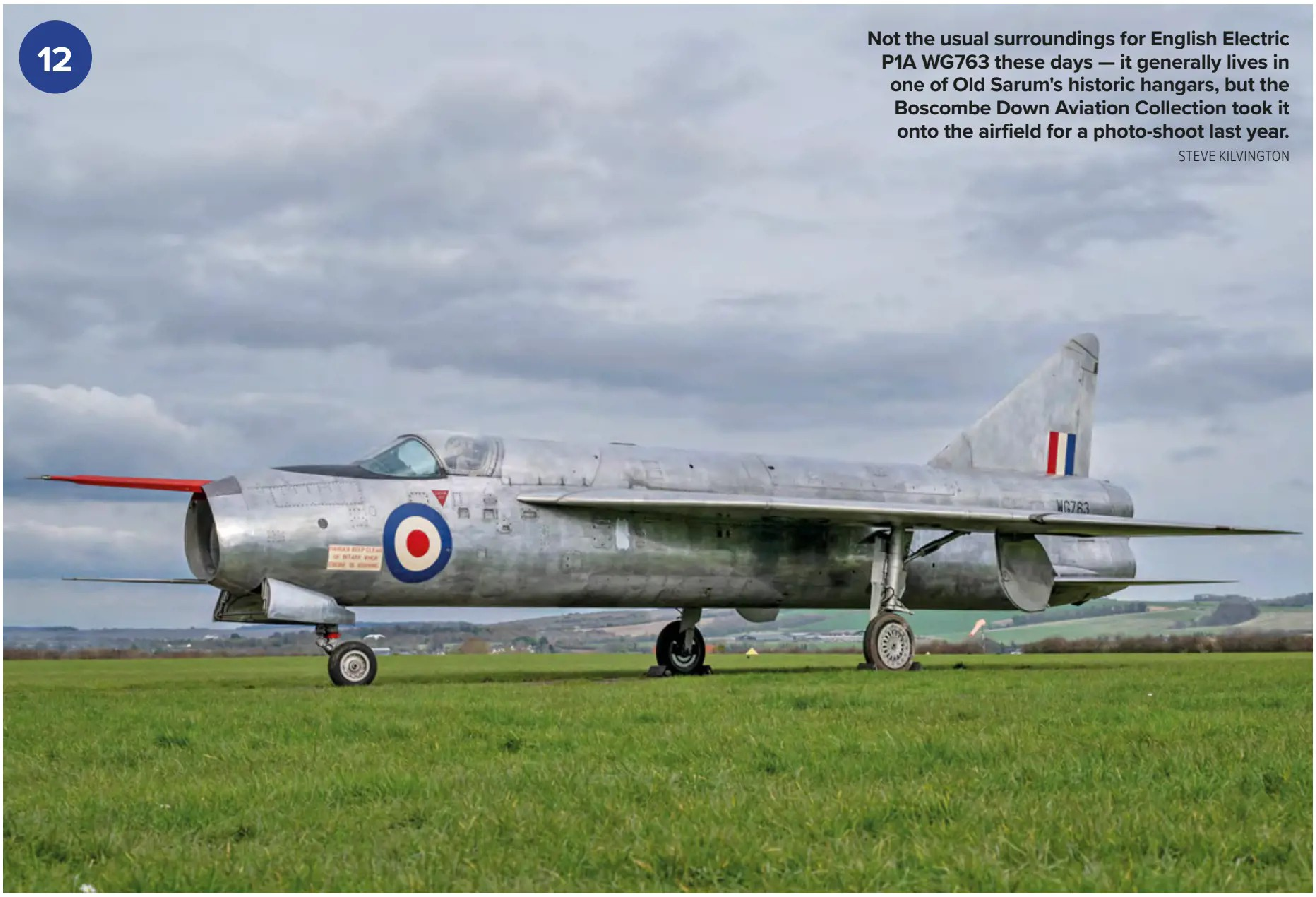
South-East of England

The **Museum of Berkshire Aviation** in Woodley sees Miles designs naturally dominating. Few recent museum transformations have been as effective as that at the **Army Flying Museum** at Middle Wallop, Hampshire — and there's nowhere else in the UK that has an Apache in its collection. All of Hampshire's other main collections have a focus to them: **Solent Sky** in Southampton with Supermarine, the **Farnborough Air Sciences Trust Museum**, and the unique **Gliding Heritage Centre** at Lasham. A day-trip in Kent can take in the **RAF Manston History Museum** and the **Spitfire and Hurricane Memorial Museum** thanks to their very close proximity. The **Kent Battle of Britain Museum** at Hawkinge has always been highly evocative of 1940, and now it has a CASA 352L, CASA 2.111, Bolingbroke and the ongoing Whirlwind fighter build, it's even more so. Don't forget photography of the exhibits is forbidden. Surrey offers the **Brooklands Museum**, a source of particular delight if your aviation enthusiasm is accompanied by a love of motor racing, and the **Gatwick Aviation Museum**. And, last but not least there's Sussex, with the **Tangmere Military Aviation Museum** and Balcombe's **Wings Museum**.

museumofberkshireaviation.co.uk
armyflying.com
www.solentsky.org
airsciences.org.uk
www.glidingheritage.org.uk
rafmanston.co.uk
www.spitfiremuseum.org.uk
www.kbobm.org
www.brooklandsmuseum.com
www.gamc.org.uk
www.tangmere-museum.org.uk
www.wingsmuseum.co.uk

The ex-Spanish Air Force CASA 2.111B stars at the Kent Battle of Britain Museum, finished as a Luftwaffe He 111 H-2. KBOBM

12



Not the usual surroundings for English Electric P1A WG763 these days — it generally lives in one of Old Sarum's historic hangars, but the Boscombe Down Aviation Collection took it onto the airfield for a photo-shoot last year.
STEVE KILVINGTON

South-West of England

If you want to see the very model of a modern aviation museum, **Aerospace Bristol** is as good as any. It really is very fine indeed, and will only get better once the Bolingbroke restoration is completed, the Freighter goes on full public display — its fuselage is currently open for inspection — and other development projects, which we previewed in last month's news pages, come to pass. Head from there up the M5 to Gloucester, and the **Jet Age Museum** at the city's airport. Down south on Salisbury Plain, at the incredibly historic Old Sarum, the **Boscombe Down Aviation Collection** has added some splendid test-flying aeroplanes in recent times, especially the Avro 707A and English Electric P1A; the most recent was ex-Empire Test Pilots' School Jaguar XX145. The **Fleet Air Arm Museum** at RNAS Yeovilton should certainly be in your plans, and Somerset also offers **The Helicopter Museum** at Weston-super-Mare, the world's largest collection of rotorcraft. Dorset's **Bournemouth Aviation Museum** is notable for the hands-on access afforded to its aircraft and cockpits.

aerospacebristol.org
jetagemuseum.org
boscombedownaviationcollection.co.uk
www.nmrn.org.uk/visit-us/fleet-air-arm-museum
www.helimuseum.com
www.bamhurn.org

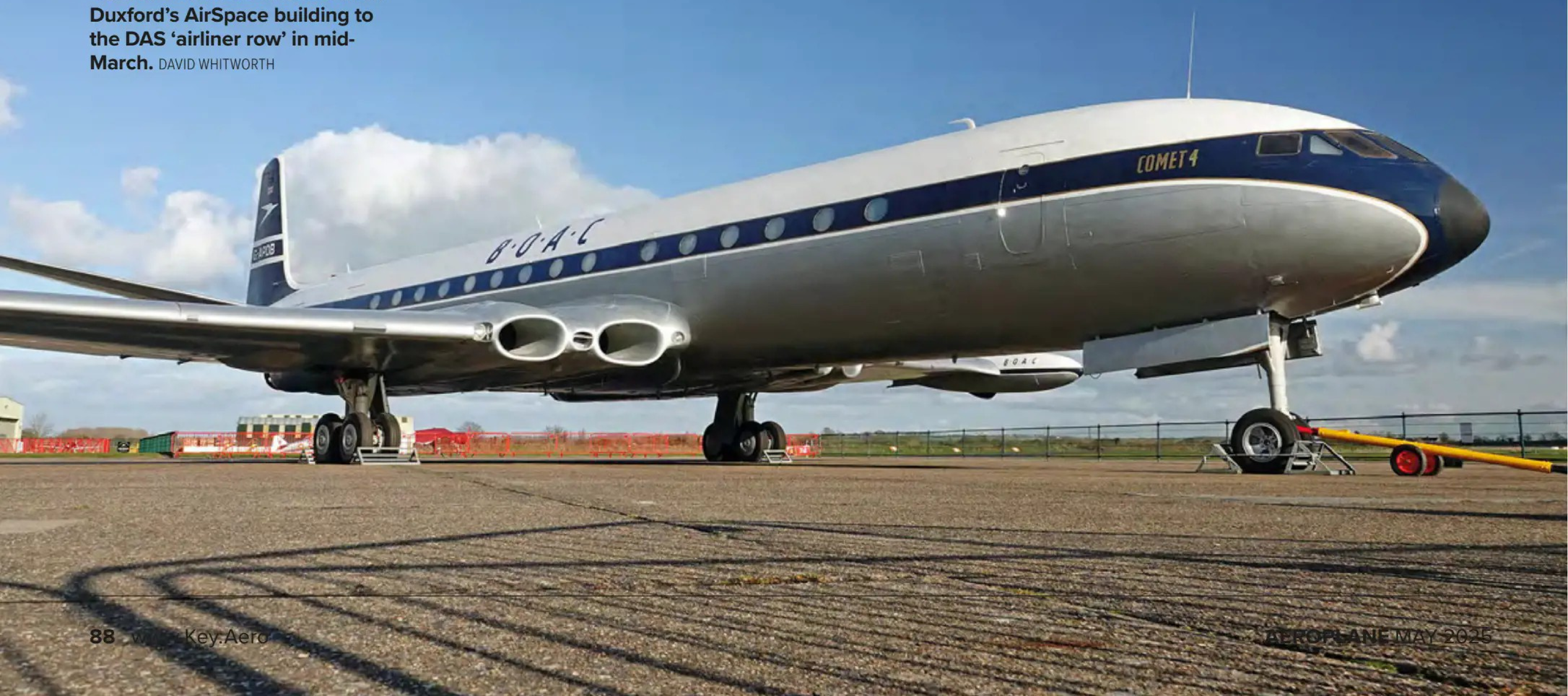
So, there you have our whistlestop tour of the UK's aviation museums — without the space on this occasion to list them all, which we'll do in the next edition of our comprehensive museums guide, but hopefully stimulating in terms of giving you ideas for trips out this summer. Do check out other collections you could go and see at the same time; our previous museums guide remains available if you buy the May 2024 issue, available digitally at Key.Aero. And of those we have included, please be aware that not all are open every day, or throughout the year, so check in advance of visiting. Above all, enjoy sampling all of what these champions of our aviation heritage have to offer.

MUSEUMS FOCUS

HIGH SOCIETY

As it celebrates its 50th anniversary, the Duxford Aviation Society is going through a period of change, with some of its museum airframes having to move outside. But its British Airliner Collection remains the most important assembly of such types on public display anywhere — and looking back at the society's beginnings half a century ago, not to mention the arrivals of its airframes, tells a great story in the UK's aircraft preservation annals

WORDS: BEN DUNNELL



A gorgeous sight outside, but a shame it's staying there: Comet 4 G-APDB en route from Duxford's AirSpace building to the DAS 'airliner row' in mid-March. DAVID WHITWORTH

To hear certain accounts, you'd think it was akin to a superpower summit. A meeting during early 1975, its purpose to discuss the future direction of the East Anglian Aviation Society. Putting it politely, there was a divergence of opinion. Some felt it should concentrate its attentions on Bassingbourn, long-time centre of its activities. Others were of the view that Duxford, where it had become the first key partner of the Imperial War Museum in occupying the hangars, undertaking restorations, making the site serviceable and holding its first public events, should be the focus. To cut a very long story short, it precipitated a split. And in its place at Duxford was formed an organisation that has now notched up half a century of staying power.

Through its British Airliner Collection, the Duxford Aviation Society now has in its care nothing less than the most historically significant assembly of UK-produced commercial aeroplanes to be found on public view at a single location. For any museum — as DAS, while independent, is just that — the standard of their upkeep would be remarkable, let alone for an all-volunteer body, lacking indoor accommodation for the majority of these large airframes. Yet there they are, a collection of national standing, a tribute not just to the engineering that went into these aircraft but also 50 years of dedication to the cause of preserving them.

DAS used to engage in many IWM projects: this team went to Sculthorpe to recover F-100D Super Sabre 54-2165 during early 1976. VIA MARK MILLER

And all that from rather unusual beginnings. The EAAS had been pivotal in getting Duxford back up and running. As the IWM's first director of the site, Dr Christopher Roads, gained traction for establishing it as a museum by way of an under-the-radar 'invasion' of its buildings, so he engaged volunteers. The East Anglian group formed the bedrock of that workforce, and was even donated an aircraft of its own, Comet 4 G-APDB, by Dan-Air. Flown in from Lasham on 12 February 1974, its final landing at Duxford laid the foundation stone for today's British Airliner Collection. When DAS was formed, ownership of the Comet was transferred by the simple means of Dan-Air altering the loan agreement.

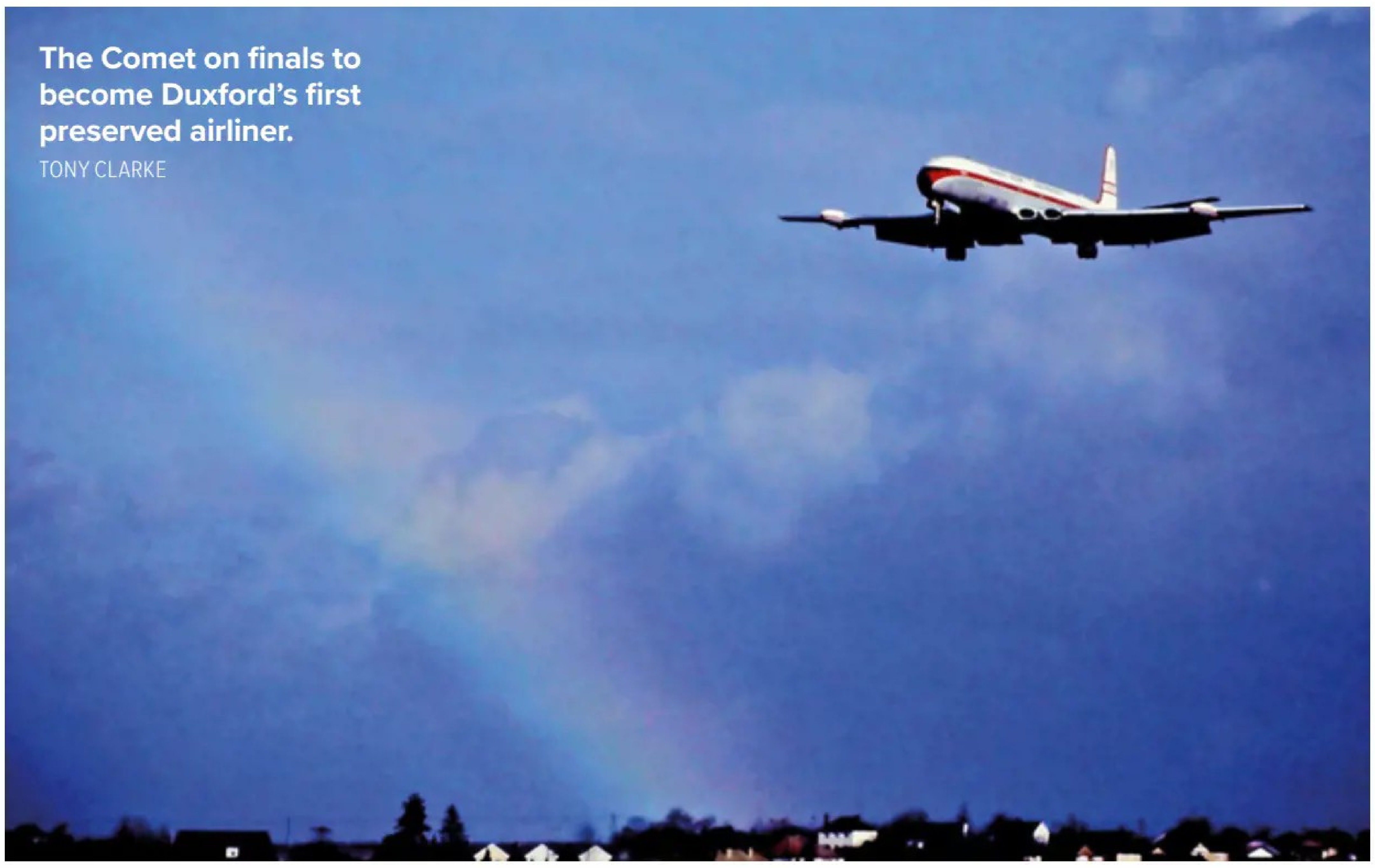
It was in mid-March 1975 that the decision to establish the new society was reached, the venue a local pub. Under the chairmanship of Roy Dove, its acting committee met on 6 April, this being considered the date of DAS's formal establishment. All this happened with the encouragement of the IWM, and a close relationship was fostered from the outset. In fact, as Christopher Roads recounted to the author several years ago, the museum insisted all volunteer workers must enrol as DAS members.

Duxford in the 1970s would be impossible to replicate today. Those who were there speak of the unquenchable optimism of the place, the feeling of being a pioneer, and in that DAS took a pivotal role. Within weeks the tone was set. All the time, something seemed to be happening. To some extent it continued the EAAS's work, such as repairing the control tower and making it increasingly functional. The runway needed sealing — a "gigantic task", said the first edition of the DAS newsletter — to prepare not just for the future, but also more imminent events.

Straight away members plunged into all manner of aircraft projects, whether keeping the IWM's ex-RAF Comet 2R, XK695, in good condition or helping look after Euroworld's freshly arrived B-17G Flying Fortress *Sally B*. When the Shuttleworth Collection's Spitfire LFVc,

de Havilland Comet 4 G-APDB

27 July 1958: First flight from Hatfield
30 September 1958: Handed over to BOAC
4 October 1958: Made first ever New York-London jet flight, setting new record for route
September 1965: Retired, sold to Malaysian Singapore Airlines as 9M-OAB
September 1969: Bought by Dan-Air, reverting to G-APDB
12 November 1973: Last commercial flight between Alicante and Teesside; afterwards, to storage at Lasham
12 February 1974: Final flight to Duxford, Dan-Air having recognised significance of airframe and donated it to East Anglian Aviation Society
6 April 1975: On formation of DAS, became its first commercial aircraft exhibit
2006: Restored to BOAC colours


The Comet on finals to become Duxford's first preserved airliner. TONY CLARKE

Bristol Britannia 312 G-AOVT

1 January 1959: Delivered to Heathrow as last Britannia 312 for BOAC
31 March 1959: Operated part of first BOAC round-the-world service, outbound via USA to Tokyo
13 September 1963: Sold to British Eagle
10 May 1969: Bought by Monarch
14 October 1974: Undertook Europe's last Britannia passenger flight, Lisbon-Luton; then to Manston-based Invicta Airlines for freight duties, culminating 10 March 1975
29 June 1975: Donated to DAS, arrived during airshow

Such had been the Britannia's last in-service employment that it presented DAS "with a long and demanding job of interior restoration", to quote the society's publication *Duxford Aviation News*. It arrived "as a bare shell" after spending three months on the Invicta freighting contract, and "all the cabin fittings that had been removed had already been sold off for scrap". This was where the visit to Biggin Hill that rescued Rapide G-AGJG came in, to say nothing of items obtained from latter-day Britannia operators.

When funds permitted — a situation which improved for the society with the funds generated following the arrival and opening to the public of Concorde — a fit-out in long-haul configuration commenced. It took plenty of hard graft; so cold was it in the winter of 1978-79 that, "even the glue froze up on one occasion". And when the interior was ready for public access in April 1980, the exterior still had to be refurbished. That took place over a gradual period — but not as gradual as the transfer of the Britannia's ownership. Realisation that G-AOVT was still on Monarch's books came, fortunately, just prior to the carrier's 2017 collapse.

The big crowd at the Duxford 75 show — an ambitious two-day affair — welcomes the Britannia. KEN PETTIT

Dragon Rapide G-AGJG not long after its 1975 arrival. It didn't fly again for another 29 years. MIKE DONELAN

AR501, made its maiden post-restoration flight on 27 June, it did so following the involvement of first EAAS and latterly DAS people. The next day, AR501 took its bow at only the second full airshow of Duxford's new era, in the staging of which DAS collaborated with the museum. It was a milestone occasion in all sorts of ways: six Spitfires setting what was then a new record in the preservation era, tens of thousands through the gates, and the landing during Sunday's flying programme of Monarch Airlines Britannia 312 G-AOVT, adding the society's next airliner for preservation — the first since it had been formed.

Still a member to this day, Mike Donelan was the DAS acquisitions officer when he visited Biggin Hill to search for Britannia parts. The Kent airfield was something of a haven for the type, several having been stripped for spares there by IAS Cargo. But present too, in a state only a little less neglected, was Dragon Rapide G-AGJG. Owned by Emanuel 'Ted' Wein, the former parachute jump platform caught Donelan's eye. The society was keen to have an airworthy aeroplane of its own, and the wartime Scottish Airways machine seemed to fit the bill. A 20-year lease deal was arranged with Wein, under which the Rapide would be returned to him in flying condition. "The aircraft", said the newsletter, "will be stripped, re-covered, re-fitted and flown for the benefit of Society members". If only it had been so relatively simple. But the ambition was clear.

As the battered-looking G-AGJG touched down at Duxford on 17 August 1975, DAS helpers were in the final stages of fettling David Tallichet's B-24J Liberator *Delectable Doris* for its farewell. Present for close on two years, its owner had decided finally to fly the bomber to his base at Chino, California, but not before the society's committee had "arranged perhaps the send-off to end all send-offs". Late on 25 August, the Battle of Britain Memorial Flight's Lancaster, two Hurricanes, Spitfire IIa and LFVb arrived to park near B-17 *Sally B* and the IWM's static P-51D Mustang *Big Beautiful Doll*. Soon *Delectable Doris* joined them, having refuelled at Stansted. Once the press had taken pictures, the B-24 and all five BBMF aircraft took off for "a bomber/fighter escort formation that may never be repeated". Indeed so. No mention, one

A May 1982 display at Old Warden by Varsity WJ945/G-BEDV, the DAS flying flagship. DAVID WHITWORTH

Vickers Viscount 701 G-ALWF *RMA Sir John Franklin*

3 December 1952: First flown, as second production Viscount
2 February 1953: Delivered to BEA
6 December 1963: Sold to Channel Airways, operated on lease by Tradair and British Eagle
December 1965: Bought by Cambrian Airways, served until Christmas Eve 1971
12 April 1972: Taken on by Viscount Preservation Trust, made last flight Cardiff-Liverpool; displayed in hangar at Liverpool, but site security concerns stopped public walk-throughs
22 February 1976: First sections of dismantled aircraft roaded to Duxford
1986: Repainted in BEA colours; oldest surviving example of type

Getting 'Whiskey Fox' ready for its road journey to Duxford was a task of exceptional complexity. "A crew of twelve members", said the report in the DAS newsletter, "has been making the long journey to Liverpool Airport to knock out umpteen rivets, remove thousands of corroded bolts and undo hundreds of other connections so that the engines, wings and tail can be removed. The most difficult items to date have been the main spar bolts. These are fitted into a taper under tension, and have to be removed by being driven out by a hydraulic ram. When they come free, they make a crack like a pistol shot. Some were refusing to come free even after having 40 tons' pressure applied and the main spar heated. The last two may have to be drilled out."

Final dismantling was delayed by bad weather, but the Viscount's last sections came apart on 14-15 February 1976 and started arriving on the 22nd. "We dare not put into print the speed the fuselage travelled down the motorway", the society reported, "but had it had wings on it might have flown!"

An en route top-up for the Viscount convoy. MIKE DONELAN

Aérospatiale/BAC Concorde G-AXDN

17 December 1971: First flew as third of six prototype/development Concordes
March 1974: Made fastest ever Concorde flight, to Mach 2.23, during trials from Tangier
1975: Offered to DAS by Department of Transport
20 August 1977: Flown to Duxford

Brian Trubshaw brings Concorde 101 in for its last landing. KEN PETTIT

This wasn't initially the Concorde Duxford was expecting to get. Said the December 1975 DAS newsletter, "It became known earlier this year that the first prototype 001 would be finishing its programme soon and this was the aircraft for which we applied. The several applicants were eventually reduced to a short list of two, namely Yeovilton and Duxford, and it was at this stage, when it seemed possible that Yeovilton might get the prize, that we realised that [101] had also finished its programme and might be available as an alternative. So the Fleet Air Arm Museum, for reasons no-one has yet explained gets the prototype aircraft, and we have the pre-production aircraft which more nearly represents the airliner which will be in service. An equitable result all round."

The big occasion was 20 August 1977, a Thursday, bad weather having delayed delivery by three days. Since its part in the Concorde flight-test programme ended and the aircraft was ferried from Fairford to Filton, 101 had not been flown, so it needed an air-test. It also had to undertake practice landings on a marked stretch of runway to show it could touch down and stop in 6,000ft. That all took place on the 17th, DAS being informed that the use of a braking parachute was allowing Brian Trubshaw to bring the aeroplane to a halt in less than 5,000ft.

Come the 20th, it was reported from Filton, "that during the circuit and bumps testing they had burnt out three of the eight brake hub cooling fans, and being a pre-production aircraft replacements were not available". Just after 10.00 another call was received: "Concorde 101 was in the air and on its way — but there could be problems with the cooling of the brakes after touchdown!" Even on the full-length runway before M11 construction began, heavy braking "was likely to cause overheating and the safety valves in the wheel hubs would blow, deflating the tyres". BAC groundcrew stood by to perform a wheel change if required.

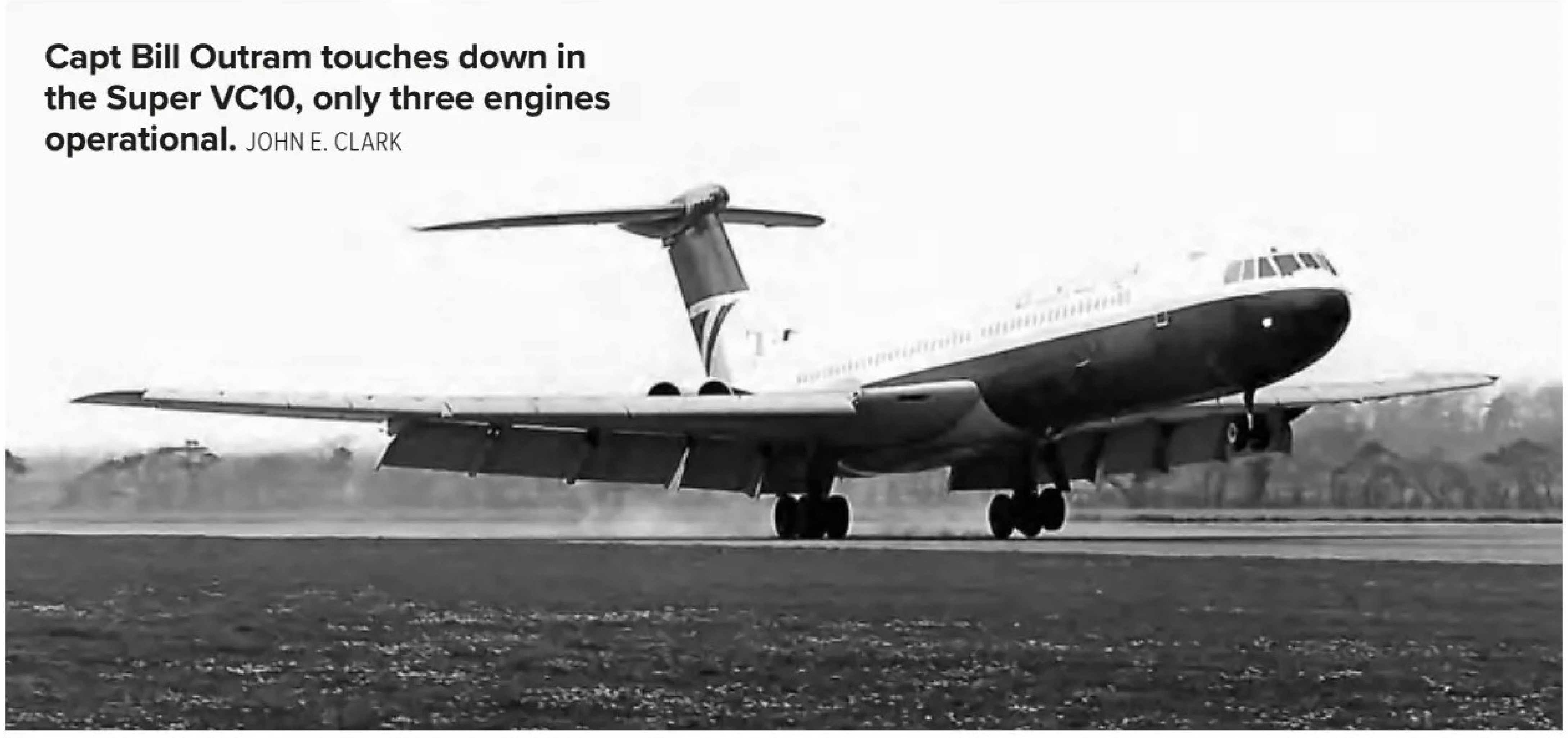
Cambridgeshire was bathed in sunshine as the aeroplane came into sight. "After some 15 minutes' local flying it joined the circuit and with Brian Trubshaw in charge Concorde made a dummy approach on runway 07 to test the visual approach aid, PAPI (precision approach path indicator), a coloured light system kindly loaned by RAE Bedford. On the next circuit the tower received 'Delta November finals' — it really was going to happen at last!"

Happen it did. Concorde 101 "made a perfect landing, on this its 273rd flight". Stopping at the eastern end, the bulldozers were waiting to start work on the motorway. Trubshaw waited there for five minutes, but the anticipated brake cooling difficulties did not materialise, so he backtracked and made his way round to the western apron. "The crew disembarked to a great cheer from the capacity crowd."

Duxford now had its biggest single attraction, and DAS the flagship of its collection. For the second time in four days, the society had received a supersonic, delta-winged jet, J 35A Draken serial 35075 having landed on 16 August as a donation from the Swedish Air Force. Incidentally, while the Concorde's arrival was still awaited, the society wondered whether it might be possible to keep its hydraulic system operational, in order to demonstrate the lowering and raising of the nose. For safety reasons, it wasn't. But in August 1987 a team from the British Aerial Museum was contracted to get the nose drooped as a one-off for a commercial advertising the government's sale of BP shares, and 2012 saw the Heritage Concorde group making possible its regular operation — along with many other on-board systems — via electrical power. It was the biggest single step forward since 101's interior was opened to the public back in 1978.

Vickers Super VC10 Srs1151 G-ASGC

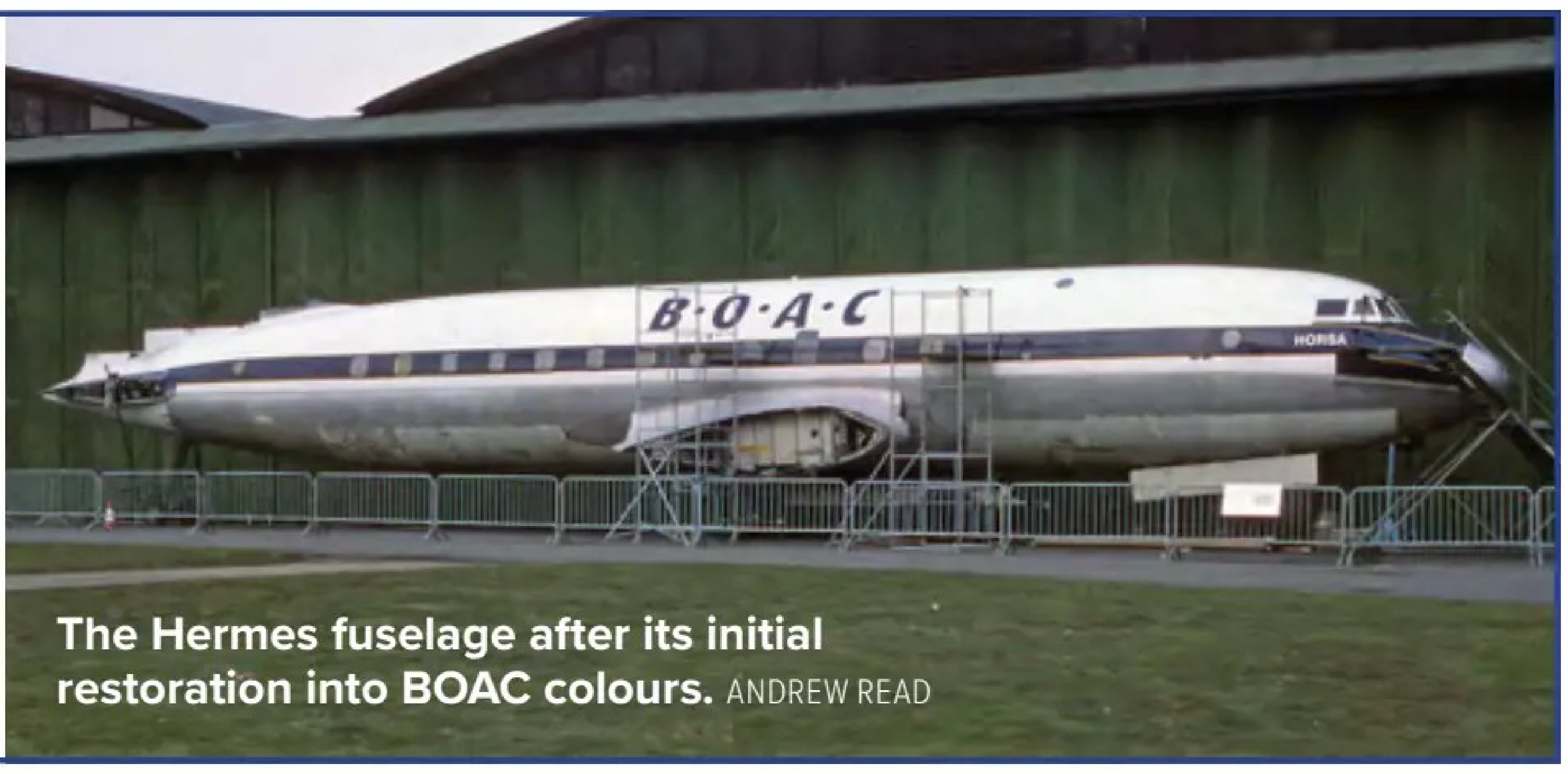
1 January 1965: Maiden flight; third Super VC10 built for BOAC
27 March: Delivered to BOAC
22 October 1979: Retired by BA
15 April 1980: Final flight to Duxford
March 1988: Completion of repaint in short-lived BOAC-Cunard livery


Capt Bill Outram touches down in the Super VC10, only three engines operational. JOHN E. CLARK

Talks over obtaining the VC10 began as far back as 1977. “Although it had been expected for some time”, said *Duxford Aviation News*, “the actual arrival was at no more than 24 hours’ notice”. Capt Bill Outram headed the crew, taking off on 15 April 1980 and flying over to Stansted at 6,000ft, “where they let down for an exploratory pass west to east over the Duxford runway. The flight was made at less than full power since there had been a precautionary shut down of the number three engine, following vibration shortly after take-off... After a wide circuit over the southern outskirts of Cambridge G-ASGC came in once more from the west. A burst of reverse thrust ensured a stop no more than halfway down the runway. Then came the interesting bit. Having, unlike the B-29” — which had arrived for the IWM the previous month — “approached from the west the pilot had to back track down the runway to reach the perimeter track. This involved a three-point turn, first a pivot around the starboard bogie, which in normal service would have been very expensive on tread; then back across the runway under reverse thrust to avoid the nosewheel going on the grass, followed by a 90 degree turn to the right.”

Handley Page Hermes IV G-ALDG *Horsa*

27 October 1949: Took to the air from Radlett
August 1950: Service entry with BOAC
1954: To Airwork, then Falcon Airways and Silver City
1962: Retired, intended for scrapping at Gatwick; fuselage survived, used by British Caledonian for cabin crew training and by Gatwick Airport fire service
January 1981: DAS and Handley Page Association joined forces to arrange transport to Duxford
2006: Restoration of sole surviving Hermes section finished



The Hermes fuselage after its initial restoration into BOAC colours. ANDREW READ

Marshalling in the Trident after a spirited arrival display. JOHN E. CLARK

Hawker Siddeley Trident 2E G-AVFB

2 November 1967: Maiden flight at Hatfield
6 June 1968: Delivered to BEA
June 1972: Loaned to Cyprus Airways as 5B-DAC
July 1974: Damaged by gunfire while parked at Nicosia during Turkish invasion of northern Cyprus
May 1977: Patched up, returned to BA and resumed original registration
27 March 1982: Retirement after use on BA Shuttle services
13 June 1982: Flown to Duxford
1990: Repainted in BEA ‘Red Square’ colours

Seeing as the arrival of G-AVFB happened during the DAS-organised Duxford 82 show, Capt John Dowling gave “a brief but spirited display”, the aeroplane seeming “reluctant to make the final touchdown to join its grounded predecessors”. That landing was, DAS reported, its 12,726th. The Trident was among a host of commercial aircraft to feature in a quite outstanding programme, the Duxford debut of an in-service BA Concorde joined by Instone’s Bristol Freighter, an Embraer Bandeirante of Genair and an AirUK Fokker F27, not to mention a DC-3/C-47 duo from Air Atlantique and Aces High. Such was the range of airline support the society could bring in.

The Concorde 'nose droops' have proved very popular. DAVID WHITWORTH

As here with the Trident last autumn, the effort to keep the airliners in tip-top condition is a never-ending task. Behind, the Super VC10 also receives attention. DAVID WHITWORTH
BEA
BRITISH EUROPEAN AIRWAYS

notices, of how Ormond Haydon-Baillie joined them in his Sea Fury without any permission…

One out, one in. Just a couple of weeks had passed since the Liberator took its leave when, on 6 September, the dismantled Spitfire PRXI PL983 came through the gates. In Shuttleworth ownership, it was intended to follow AR501 back into the skies, with DAS members doing the honours. But if its unexpectedly bad condition and a shortage of funds on the Shuttleworth side meant PL983 would not be seen through to completion, nothing was about to stop other efforts in their tracks. The road move of Viscount G-ALWF from Liverpool was an immensely complex undertaking, carried out successfully. And when news came before the end of 1975 that Concorde 101 had been allocated to DAS, there was understandable euphoria. Concorde's addition, both the society and the IWM felt, would really put Duxford on the map. They weren't wrong.

Not all plans came to pass. The early DAS newsletters offer evidence of certain hopes and pipedreams that foundered in the face of reality. Having taken his Liberator to the States, David Tallichet "offered IWM/DAS the use of some of his delectable aircraft from his 'Yesterday's Air Force'. The intention is that they should be housed and maintained at Duxford and operated around the English and European air shows so that they could pay for themselves. The types on offer include Kittyhawk, Thunderbolt, Mustang, Invader and Corsair". All these types would appear in Duxford's skies, but not yet. In early 1976, it was learned "that the Viscount Preservation Trust has a second Viscount, in flying trim, and would we like to have it as well for the time being?" This was another step too far.

But in both cases, there was recognition of DAS's ability to take on projects of considerable magnitude. Since the summer of 1975 it had been led by the dynamic Don Selway, a former RAF Beverley and Varsity pilot who had taken up landscape painting, but devoted an immense amount of time to Duxford. He obtained ex-Meteorological Research Flight Varsity T1 WF425 with a view to its airworthy preservation, while the IWM had earlier acquired a more standard trainer, WJ945, as a static exhibit. Of the pair, '945 was far more suitable for continued operation, since '425 lacked an inner main spar strengthening modification and needed a major inspection. They were duly swapped, and '945 put back on the road to airworthiness as a civil aeroplane, registered G-BEDV.

The Varsity was still occupying the society as its inaugural year came to a close. With an all-encompassing involvement at Duxford, going far beyond the airliners, so was a great deal else. It established a Military Vehicle Wing, still in existence

Dove G-ALFU on show in the mid-1980s, not long after its transfer to DAS. K. KRALLIS

de Havilland Dove 6 G-ALFU

1948: Built as Dove 2, later upgraded to Dove 6 with more powerful engines; entire service until 1972 with Civil Aviation Flying Unit at Stansted, used for checking navaids and comms equipment, crew training and light transport
1973: Donated to IWM, moved to Duxford
1984: Transferred to DAS in exchange for Saab Draken, which didn't fit into the inventory

Once delivered through Duxford's gate, the Ambassador began to go back together. KEY COLLECTION

Airspeed Ambassador 2 G-ALZO

25 November 1952: Delivered to BEA, named *RMA Christopher Marlowe*
June 1958: Retired, stored Cambridge
1960: Bought by Royal Jordanian Air Force for VIP and general transport duties
1963: Sold to Dan-Air, used for both passenger and cargo work
28 September 1971: Flew last scheduled Ambassador passenger flight; then passenger charter the next day
3 October 1971: Final ever flight on return from Zagreb; arrived at Lasham
October 1986: Having been donated to DAS, moved by road to Duxford
2012: Roll-out with much of restoration done; finished for DAS's 40th anniversary in 2015

When the time came to retrieve the Ambassador from Lasham, again it was John Romain and Norman Chapman who headed the effort. As the *Duxford Newsletter* recounted, "The team faced a slightly altered set of problems to the preceding Spring since the Ambassador, unlike the York, was built to stay in one piece. This meant that a certain amount of skin and fairings had to be removed to gain access to the main bolts holding the tricky centre section". However, it was done within five days, and once loaded the road journey was completed in convoy on 16 October. Still dismantled, G-ALZO was on show at Duxford's season-ending air day, but thereafter, "John Romain wasted no time. By the following weekend most of the reassembly work had been done."

The restoration that ensued was conducted in part inside a temporary canvas shelter just west of Duxford's hangars until more suitable accommodation was provided. It has resulted in a unique showpiece, albeit one that has only ever been exhibited outside due to lack of indoor space, despite its status as a sole survivor.

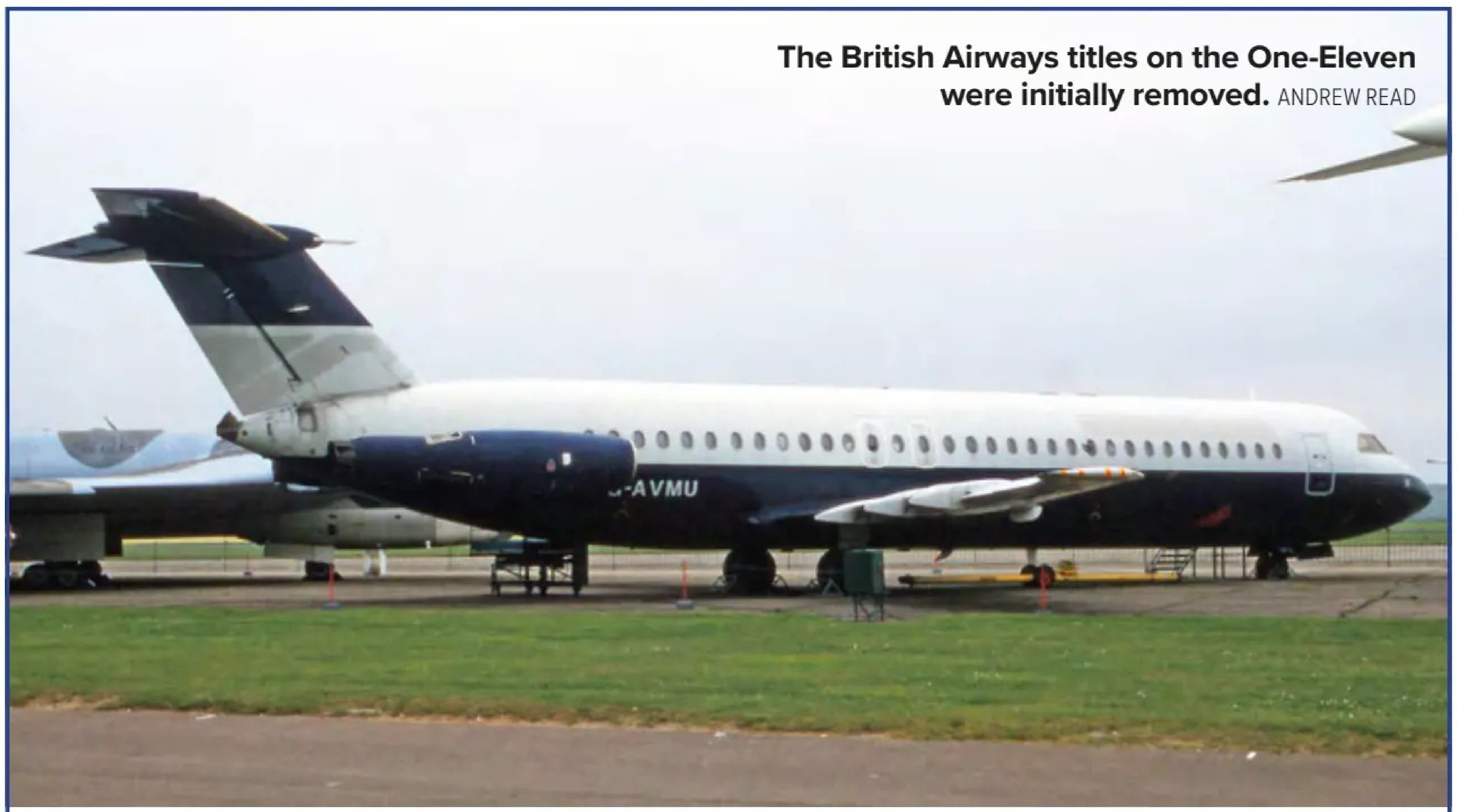
The York during its years with the Air Scouts at Lasham. JOHN PARKER

Avro York I G-ANTK

January 1946: Rolled out at Yeadon, Leeds
August 1946: Entered service as MW232 with No 242 Squadron, RAF; then with No 511 Squadron, including use on Berlin Airlift
1950: To Fairey for flight refuelling trials until 1951, then stored
1954: Sold to Dan-Air, registered G-ANTK; performed long-range freight charters including Ministry of Defence contract work
April 1964: Retired, stored Lasham and used by local Scouts as headquarters
1974: Dan-Air volunteers started restoration, but not completed
May 1986: By road to DAS
2006: Restoration completed

Lengthy negotiations with Dan-Air preceded acquisition of the York. After they bore fruit, transporting the airframe from Lasham would be a bigger undertaking even than the Viscount epic. To separate the big Avro into five sections, DAS called upon the engineering arm of the British Aerial Museum, John Romain taking time out from its first airworthy Blenheim restoration to join legendary engineer Norman Chapman in heading the eight-man group.

Once at Duxford, a journey made thanks to the generosity of haulage firm Vanguard Engineering, it was John Kidby who took on leadership of the rebuild as the York's crew chief. Said the *Duxford Newsletter*, "John had been tooling up for the job for several months before G-ANTK arrived and in that time received valuable help from a number of sources, notably the Battle of Britain Memorial Flight, which lent the prop slings, jacking pads and engine stands used by its famous Lancaster". All sorts of other outside assistance helped hasten the job, and by the summer of 1987, "the fuselage was in one piece". There was still a great deal to do and, alas, Kidby would not live to witness its completion. But, again, what a project for a volunteer society to embark on, let alone finish.



The British Airways titles on the One-Eleven were initially removed. ANDREW READ

BAC One-Eleven 510ED G-AVMU *County of Dorset*

19 January 1969: First flown
19 March 1969: Delivered to BEA
16 October 1992: Operated last commercial flight with BA, then stored Bournemouth
4 March 1993: Sold to DAS, ferried to Duxford

The first DAS arrival by air since Herald G-APWJ in 1985, the One-Eleven was acquired for a symbolic £1 after it landed. "Despite the tatty appearance of the aircraft it was actually in good condition", said DAS later. It even remained partially live, for a time. Early on in its presence at Duxford, G-AVMU's auxiliary power unit was fired up on occasion, "strictly after the public had gone home". This was done "to check which systems would be safe for connection to the mains and which ones we needed to pull the circuit breakers on... Sadly we had to pull the plug on this exercise as we needed to start treating the exterior of the engines with inhibitor to slow down the inevitable corrosion."

Hand-over of the Trislander on a very hot June day. DAVID WHITWORTH

Britten-Norman BN-2A MkIII Trislander G-BEVT

1 July 1977: First flight at Bembridge, though didn't find customer for six years
22 July 1983: Acquired by Guernsey-based Aurigny; completed in excess of 86,000 landings by time career concluded, ending up as Europe's last operational Trislander
21 June 2017: Delivery flight to Duxford

today, and the aerodrome's first volunteer fire service. DAS fought strongly against the route of the M11 motorway truncating the eastern end of the airfield's runway, Don Selway representing its views at a planning inquiry in Cambridge during March 1976. History shows the campaign failed, but the vigour with which DAS pursued it demonstrated its commitment to the Duxford cause at all levels.

And that was just the start. Even as more airliners were acquired, for many years DAS took part in almost every IWM aircraft project. Day-to-day upkeep, full restorations, recoveries: you name it, society members were engaged in it. To cite but a couple, they helped repatriate the Sunderland from France, and got the return to flight of the Shuttleworth Sea Hurricane under way. Some £70,000 was contributed to the museum's Superhangar project. From 1976-92, DAS organised Duxford's main airshow in 'even years'. And many of its people were involved with the home-based private operators.

Having what amounted to a flyer of their own provided another focal point. From its debut at the 1976 International Air Tattoo, Don Selway's Varsity was operated for just over a decade, application of the DAS crest denoting its status as something of a flagship. It passed to the IWM's static collection, at least until disposal. With WJ945 grounded, Instone's Bristol Freighter G-BISU appeared on loan in November 1987, the hope being to keep it active. A year later, a sale to Canada put paid to that.

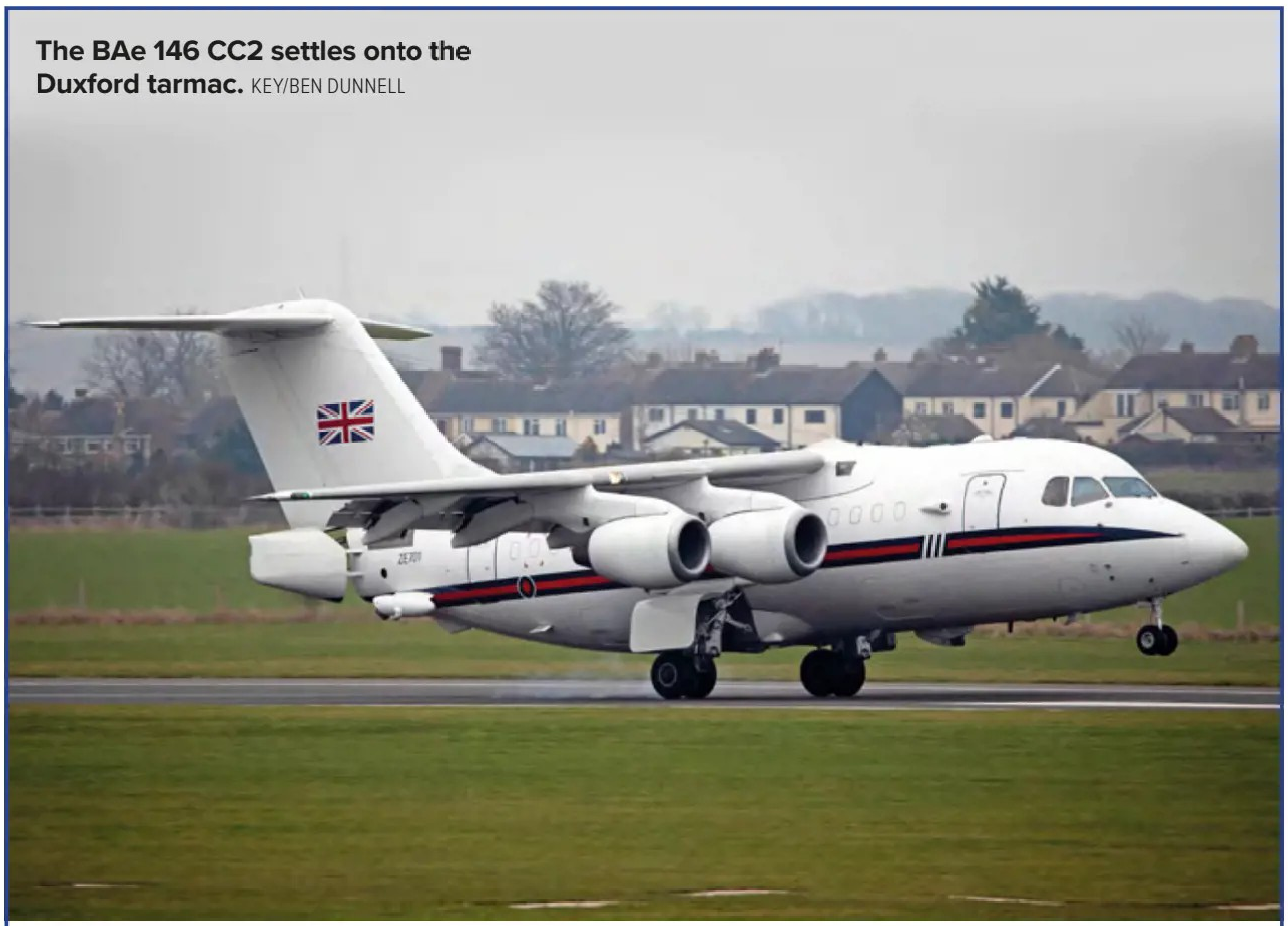
The ambition of having an airworthy Rapide of the society's own was not destined to succeed, for G-AGJG required a far more in-depth restoration than was first thought, and it was clear the lease from Emanuel Wein was impractical. In 1986 it was acquired from him by David and Mark Miller, who had already been working on the project since 1977. Once it took to the air again in 2004, undoubtedly as the world's finest DH89A, the Millers' generosity allowed many DAS members to fly in it before the aeroplane's hangarage at Duxford was withdrawn.

This was just reward for their part in perpetuating Britain's civil aviation heritage. Even if much about Duxford's make-up has altered, the IWM having assumed many of the functions DAS used to perform, the society's ethos has not. Looking back to its first year explains so much about why it endures, even through a great deal of change. Adoption in 2012 of the British Airliner Collection name gave a new coherence to the fleet, and can be seen as the first step towards 2022's splendid achievement of formal museum accreditation. With this comes the possibility of access to future grants augmenting the funds generated by memberships, public access to the aeroplanes, their hiring for film and TV productions, and the myriad other sources that have traditionally underpinned DAS's activities.

Such official recognition would never have been possible without the constant conservation and improvement of the aeroplanes, never a cheap or easy business, but one which is about to become more difficult. The IWM's revamping of the AirSpace building into a Cold War exhibition means the York, Dove and Comet have sadly lost their indoor accommodation, leaving only the Hermes fuselage — which also contains the DAS Museum on British civil aviation history — and Concorde inside. As these words were written, a great deal of time and effort was going into the resulting rearrangement, while the Viscount was in use for another filming project.

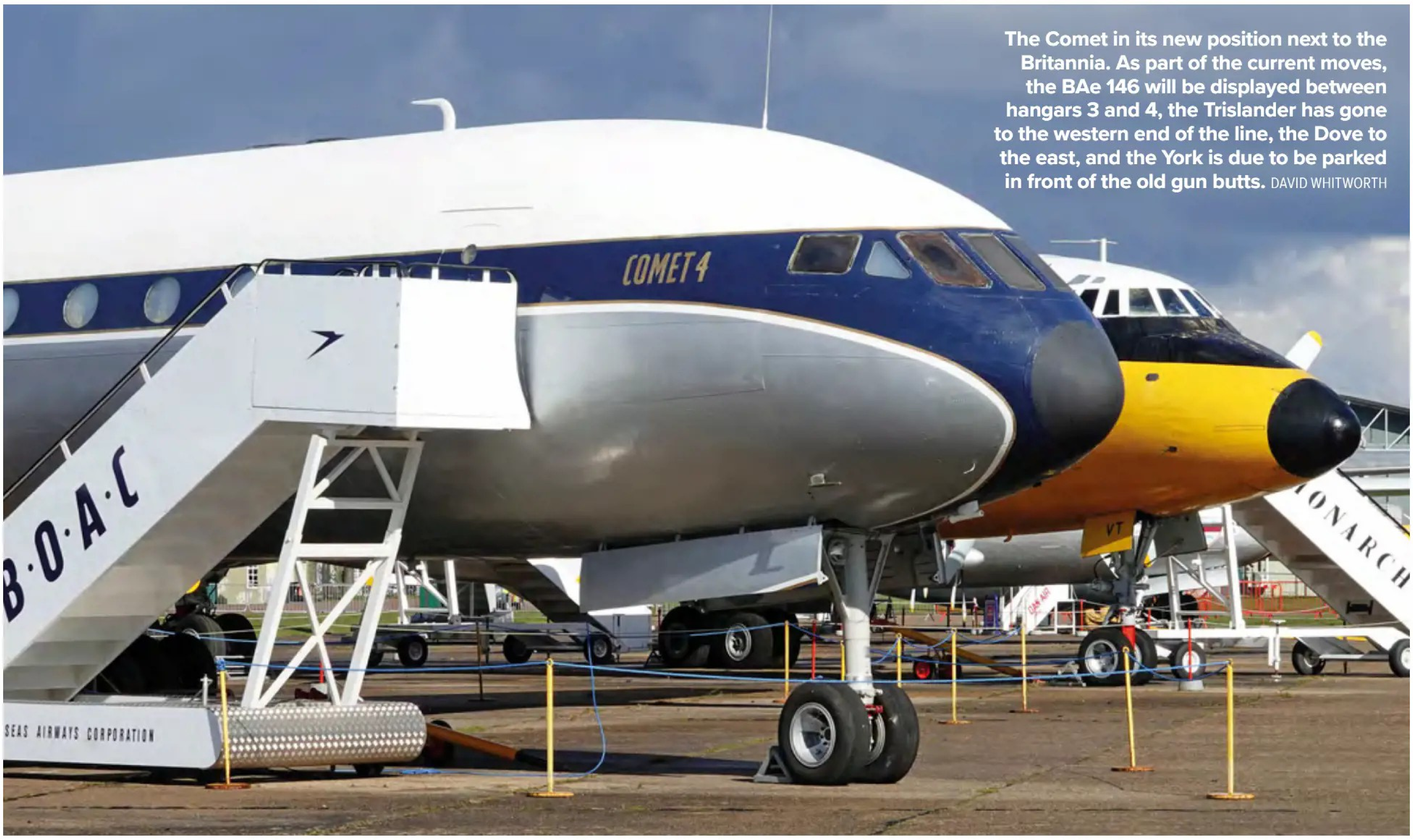
Keeping fully 11 airframes, up to VC10 size, in the best condition when exposed to the elements represents a significant burden. In broader heritage terms, given the importance of the collection, it's also a considerable responsibility. But with a 50-year track record, few other organisations are better-placed to take it on. And as that milestone is reached, it seems timely to reflect — for it might otherwise be forgotten — on how DAS helped make Duxford the place it is today.

With thanks to Chrissie Eaves-Walton and Mark Miller. To contribute towards preservation of the British Airliner Collection, visit www.das.org.uk


The BAe 146 CC2 settles onto the Duxford tarmac. KEY/BEN DUNNELL

BAe 146 CC2 ZE701

12 April 1985: First flown at Hatfield as one of initial pair of 146s produced in Statesman configuration for RAF's Queen's Flight; fitted-out at Hawarden
July 1986: Delivered to Benson
1 April 1995: Still on strength when Queen's Flight disbanded and merged into No 32 Squadron — as No 32 (The Royal) Squadron — at Northolt
24 January 2022: Arrived at Duxford after long career transporting members of royal family, military and government officials; sold by RAF to existing 146 operator Pionair based in Sydney, Australia, together with other remaining CC2 and RAF's two CC3 'quick-change' variants; Pionair donated both CC2s to museums; space taken on 146's arrival at Duxford saw Herald G-APWJ leaving for Morayvia at Kinloss, northern Scotland


The Comet in its new position next to the Britannia. As part of the current moves, the BAe 146 will be displayed between hangars 3 and 4, the Trislander has gone to the western end of the line, the Dove to the east, and the York is due to be parked in front of the old gun butts. DAVID WHITWORTH

DUXFORD
AVIATION SOCIETY

50

Fifty glorious years

1975-2025

DUXFORD AVIATION SOCIETY
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20

EVENTS NOT TO MISS

Our choice of the best worldwide airshow action for the historically minded aficionado in 2025

COMPILER: BEN DUNNELL

The Aircraft Restoration Company's Blenheim in the hands of John Romain. BEN DUNNELL

Hurricanes aplenty will scramble from Duxford in 2025. BEN DUNNELL

IWM Duxford

Duxford, Cambridgeshire | Various dates

The growth of Duxford's air event schedule, encompassing a variety of smaller events alongside its two main airshows, has been a very pleasing aspect of recent years. For 2025 there will be a trio of themed Flying Days: VE-Day on Saturday 10 May, D-Day on Saturday 7 June and The Americans on Friday 25 July, the latter on a weekday to hopefully allow present-day US Air Force flypasts. The delightful Flying Evening takes place on Saturday 16 August, and the season-closing Flying Finale on Saturday 4 October. The 'big ones' are the Summer Air Show on Saturday 21-Sunday 22 June, and the Battle of Britain Air Show on Saturday 6-Sunday 7 September, slightly earlier than usual to avoid a clash with the Goodwood Revival, which draws in many Duxford-based warbirds.

Since we were compiling this in March, relatively few acts had been publicly confirmed. However, Frédéric Akary's Canadair Sabre will fly at the July, August and September events, while given the 85th anniversary of the Battle of Britain, the traditionally large assembly of Spitfires and as many Hurricanes as can be mustered will make for an especially spectacular 'Big Wing' finale to the year's premier UK warbird show in September. The RAF provides the Red Arrows on the Sunday of the Summer Air Show and for the Flying Finale, plus the Typhoon and BBMF throughout the Summer Air Show weekend.

TICKETS AND INFORMATION: *www.iwm.org.uk/airshows (Note: admission by advance ticket only)*

The Red Arrows on the break at Ragley Hall. PAUL BOX

Midlands Air Festival

Ragley Hall, Warwickshire | Friday 30 May-Sunday 1 June

The Midlands Air Festival is not just an airshow, featuring as it does hot-air balloons and large flying model aircraft, as well as an extensive air display programme. Very much family-orientated, there's still lots for the enthusiast to enjoy — no lazy 'same every year' line-ups here. Inclusion in 2025 of Frédéric Akary's Sabre for what will be its UK flying display debut on the Saturday and Sunday, the Niebergall father-and-son pairing of SF260s, the Flying Bulls' TAH-1 Cobra and aerobatic Bo 105 helicopters, and the Commemorative Air Force's touring R4D-6S bears that out. All sorts of familiar favourites will be on hand too, though: the Red Arrows on all three days, and the likes of B-17G *Sally B* and Rich Goodwin's Jet Pitts at the weekend. More acts remain to be confirmed.

The Friday sees tethered hot-air balloons as the lead-in to a four-and-a-quarter-hour afternoon airshow. After that comes the festival's first mass balloon ascent, the large models, 'Nightfire' evening pyrotechnic aircraft displays — Grob G109s, Extra EA300S and Fournier RF4 — a balloon night glow and the firework finale. Saturday and Sunday really are all-day affairs, beginning with the mass balloon ascent from 06.00. To list all the elements would take up too much space, but the main weekend flying displays are set to be divided into two parts, and Saturday evening sees another mass ascent; Sunday closes with a display of special shape balloons.

TICKETS AND INFORMATION: *www.midlandsairfestival.com (Note: admission by advance ticket only)*

Shuttleworth Collection

Old Warden, Bedfordshire | Various dates

Britain's finest vintage airshows at its best venue for flying displays — and, as you'll read in the feature that follows, with ever greater ambitions for its shows. We bring you much more detail there, but suffice to say the season ahead promises appearances by numerous aeroplanes never seen before at Shuttleworth, as well as a fresh format for some of the events. Multiple visits are a must.

TICKETS AND INFORMATION: *www.shuttleworth.org*

Visiting and home-based classics mingle on the Old Warden greensward. BEN DUNNELL

4

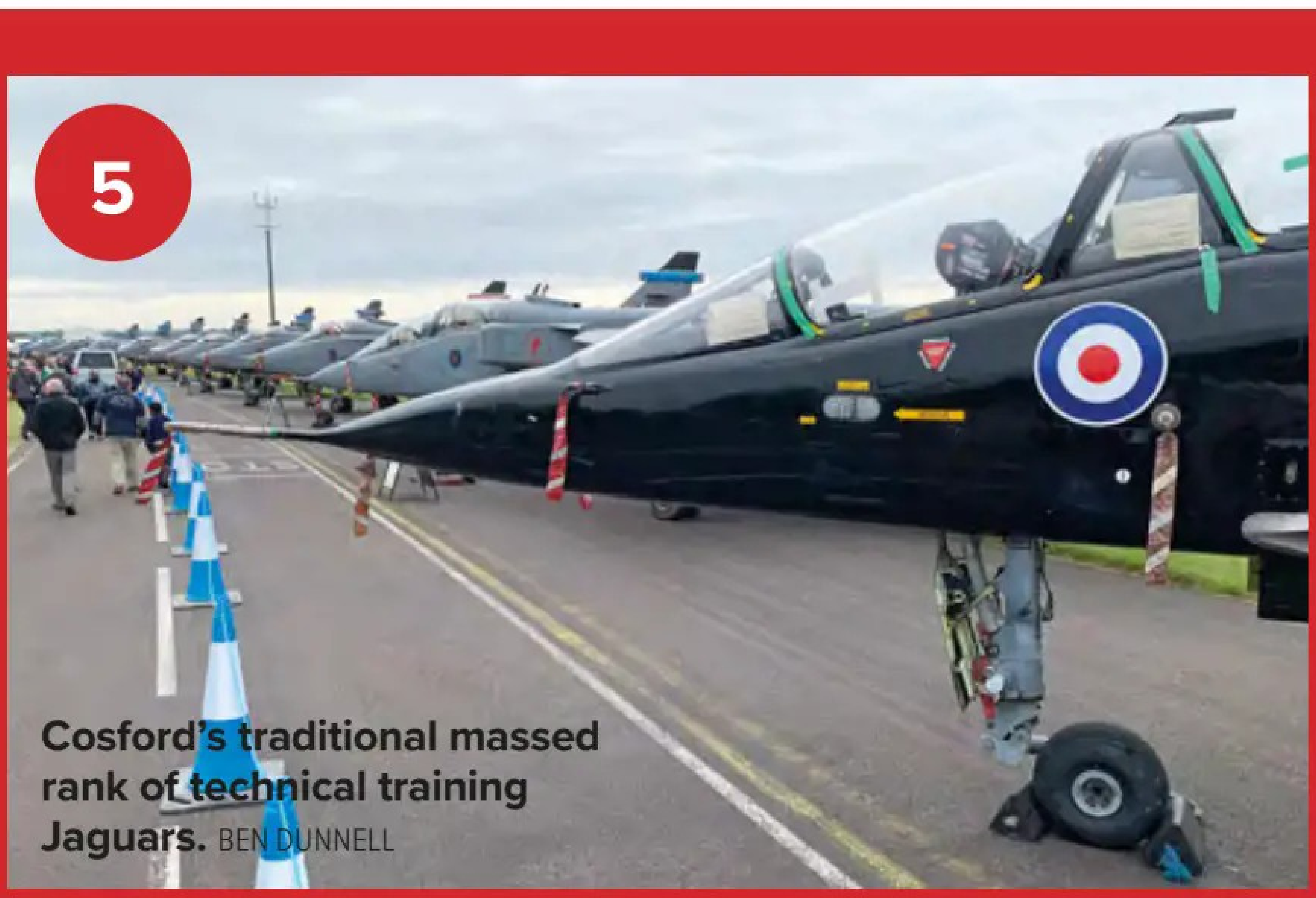
The French Navy excels at 'old and new' formations, such as this Alizé, Paris and two-Rafale combine. BEN DUNNELL

Meeting Aérien 100 ans Base d'Aéronautique Navale d'Hyères

BAN Hyères, France | Sunday 1 June

Any chance to see French Navy air assets performing is to be taken up, and their heavy involvement is guaranteed at this one-off show celebrating the centenary of the base at Hyères. All sorts of classics have been booked — such as the Alizé, Zéphyr, Paris, Noratlas, Alouette II and III, Flamant and Alcyon will give a very French flavour, augmenting other warbirds. But the modern-day Aéronautique Navale takes the lion's share of the flying list with Rafale M, Atlantique ATL2, H160, NH90 Caïman, Falcon 10(MER) and 50, E-2C Hawkeye and Dauphin.

TICKETS AND INFORMATION: *www.hyeres2025.fr*



5

Cosford's traditional massed rank of technical training Jaguars. BEN DUNNELL

RAF Cosford Air Show

RAF Cosford, Shropshire | Sunday 8 June

The last public RAF airshow, Cosford has a classic feel to it. This year's theme is 'Commemorate, Celebrate, Innovate,' taking in a broad sweep of military aviation. So far confirmed on the vintage side are the Great War Display Team, Hurricane Heritage's Harvard, the Fighter Aviation Engineering P-47D and Mustang, Vampire T11 WZ507, and the pair of Strikemasters operated by NWMAS. The nine-ship Swiss Air Force PC-7 Team provides that air arm's sole UK show representation this season. The RAF will provide as much as it can muster. A VE/VJ-Day-themed Victory Village adds a nostalgic element to the ground exhibits.

TICKETS AND INFORMATION: *www.cosfordairshow.co.uk (Note: admission by advance ticket only)*

6

Tora! Tora! Tora!, La Ferté-Alais-style. BEN DUNNELL

Meeting Aérien 'Le Temps des Hélices'

La Ferté-Alais, France | Saturday 7-Sunday 8 June

A movie theme pervades the annual La Ferté-Alais show for 2025, very appropriately given how the Salis family's aviation activities at the hilltop grass aerodrome over the course of numerous decades have included participation in so many cinematic productions. Evocations of famous big-screen epics such as *North by Northwest* with six Boeing Stearman Kaydets, *Indiana Jones and the Last Crusade* using a Pilatus P2 and another Stearman, *Empire of the Sun* with the W Aircollection's TF-51D Mustang, and of course *Tora! Tora! Tora!* with the usual horde of T-6s will loom large on the bill. As always at La Ferté, multi-aircraft scenarios dominate proceedings, and the French military has a major contribution to make.

It is planned to present some very notable new additions, too. Eberhard Thiesen's superb Messerschmitt Bf 109 E-4 is set for what should be its debut public display, flown by Charlie Brown (see *Aeroplane* April 2024). The delightful Salmson Cri-Cri trainer of the 1930s, owned by the home-based Casques de Cuir association, will perform for the first time if completion of its restoration and test-flying permit. The Dakota sur la Normandie/Chalair C-47B, a regular at lots of French shows, will have for company the C-53D of the Rennes-based Musée Aéronautique de Bretagne, which returned to flight last summer, and the Commemorative Air Force R4D. Joining the familiar OV-10B Bronco from the Musée Européen de l'Aviation de Chasse at Montélimar will be its recently added Conair Turbo Firecat, the pair putting on a 'Cal Fire' — California Department of Forestry and Fire Protection — tableau. And Rich Goodwin is visiting from the UK with his Jet Pitts. This looks set to be a very fine edition of one of Europe's finest aeronautical spectacles. If you've not been before, La Ferté is always worth it.

TICKETS AND INFORMATION: *letempsdeshelices.fr*

7

Leszno has witnessed many a spectacular Polish Air Force C-130E flare dump. GETTY

Antidotum Airshow Leszno

Leszno Airport, Poland | Friday 20-Saturday 21 June

This fairly recent addition to the European calendar has carved out a remarkable reputation through its sheer style, imagination and spectacle. There are daylight displays, but even they feature one-offs: as an example, last year, a specially created performance involved Guy Westgate's aerobatic SZD-59 glider being launched from beneath a hovering Bo 105 helicopter. Come the evening, a twilight and night show fills the sky with pyrotechnics, backed by live music. Early confirmations for 2025 include major participation by the German military, with the debut of the Luftwaffe's new Tornado solo demo and its more established Eurofighter EF2000 display, plus the Heeresflieger's NH90 and Tiger helicopter routines; the Flying Bulls' B-25, P-38, P-51 and Corsair, and Georg Raab's Spitfire IX MH415.

TICKETS AND INFORMATION: *antidotumairshow.pl*

8

The Avenger on the left, owned by Tom Buck, is booked for Thunder over Michigan; the one at right, from the Prescott Foundation, isn't yet. KEY/NIGEL PRICE

Thunder over Michigan Air Show

Willow Run Airport, Michigan, USA |
Friday 20-Sunday 22 June

What is now the Michigan Flight Museum — formerly the Yankee Air Museum — is behind Thunder over Michigan, which this year celebrates the TBF/TBM Avenger by gathering an unprecedented 13 or more of them. Several are new to the show, and all three operated by the Commemorative Air Force will be present together, a rare occurrence. More conventional entertainment comes from the US Navy Blue Angels and US Air Force F-22A Raptor. The Blues will open the Friday evening show; Saturday and Sunday are afternoon airshows. And it's worth noting that for 2025 the showground reverts to a standard format, instead of the post-COVID 'drive-in' arrangement which lingered for a long while.

TICKETS AND INFORMATION: *thunderovermichigan.org*

9

The latest Aero Legends Spitfire IXT, MJ444, in action at the Headcorn show. ALAMY

Headcorn Battle of Britain Airshow

Headcorn, Kent | Saturday 28-Sunday 29 June

Aero Legends' annual warbird showcase becomes a two-day affair in 2025, rather than being held over three days, but will continue its tradition — established over the course of a decade — of providing a fine array of largely historic displays at a verdant location. The home team's fleet of Spitfires, C-47s, Harvards and others looms large. Visitors often hail from the Duxford-based fleets and others.

TICKETS AND INFORMATION: *www.bobairshow.co.uk (Note: admission by advance ticket only)*

The National Warplane Museum's Geneseo-based C-47A. BEN DUNNELL

Geneseo Airshow

Geneseo, New York, USA | Saturday 12-Sunday 13 July

The 'Greatest Show on Turf' is how the National Warplane Museum bills its annual airshow. The 2025 theme is the 80th anniversary of the end of World War Two in the Pacific, and a focused array of set-pieces will pay tribute. No such commemoration would be complete without reflecting how it all started, through the Commemorative Air Force's *Tora! Tora! Tora!* Pearl Harbor re-enactment; four B-25s are due to recall the Doolittle Raid, C-47s and a C-53 the 'over the Hump' China-Burma-India missions, and three Corsairs, Wildcat and Avenger will depict some of the most important Pacific fighters. A formation flypast is intended to reflect the flyover that took place when Japan signed its surrender aboard the USS *Missouri* in Tokyo. Modern military acts are the US Air Force F-35A and US Navy F/A-18F demo teams.

TICKETS AND INFORMATION: *nationalwarplanemuseum.com*

Lockheed 12A G-AFTL will be juxtaposed with RIAT's modern 'Eyes in the Skies'. MARTIN NEEDHAM

Royal International Air Tattoo

RAF Fairford, Gloucestershire | Friday 18-Sunday 20 July

RIAT's status as the world's largest — and premier — military airshow is not in doubt, and it's been on notably outstanding form in recent times. This year marks the 40th anniversary of the event moving to its current home at Fairford, and efforts are being made to secure the attendance of certain actual airframes that appeared at the 1985 show. Several are still airworthy, so look out for news on that score.

The operational theme, Eyes in the Skies, will bring forth some interesting historic aeroplanes in the static park. Fighter Aviation Engineering's ex-Sidney Cotton Lockheed 12A Electra Junior will contrast with modern reconnaissance platforms, as will the same operator's Spitfire XIV; the intention is to park Plane Sailing's Catalina near maritime patrol types of more recent generations.

TICKETS AND INFORMATION: *www.airtattoo.com*
(Note: admission by advance ticket only)

EAA AirVenture Oshkosh

Wittman Regional Airport, Oshkosh, Wisconsin, USA | Monday 21-Sunday 27 July

AirVenture's unrivalled size and scope satisfy pretty much every interest in aviation. It is hard to think of a significant aircraft type flying in North America that hasn't visited Oshkosh at some time or another, but the Me 262 is one; if plans to get it back into the air proceed as intended, the Virginia Beach-based Military Aviation Museum hopes to put that right in 2025 with its reproduction example. Also marking 80 years since the end of World War Two, B-29s *Fifi* and *Doc* will again be present together, flying together as an early item in the 23 July evening/night show.

Other anniversaries being celebrated include 100 years of Goodyear's famed blimps, of which two will be exhibited during the week, and the centenaries of both Fairchild and Travel Air aeroplanes, with large gatherings of their products and associated activities. A focus on humanitarian aviation will see the DC-8 operated by the Samaritan's Purse relief organisation — the last one flying on the US register — taking pride of place in the Boeing Plaza display area.

TICKETS AND INFORMATION: *www.eaa.org/airventure*

B-29s *Doc* and *Fifi* are set for another Oshkosh reunion. COURTESY OF AOPA

Both B-17G *Sally B* and the Suffolk Spitfire, AAF-schemed MkXVI RW382, will display at Old Buckenham. BEN DUNNELL

Old Buckenham Airshow

Old Buckenham, Norfolk | Saturday 26-Sunday 27 July

It's a seriously lovely event, Old Buckenham — a splendid venue in the heart of rural Norfolk, at the wartime home of the US 8th Air Force's 453rd Bomb Group and its B-24s, with a homely atmosphere, yet growing year on year. This now means a 20-act programme on both days, rendered international in 2025 by the appearances of Frédéric Akary's Sabre and Tony de Bruyn's Bronco. Other newcomers to 'Old Buck' this time will be the Stampe Formation Display Team, Team Raven's Vans RV-8s, Paul Ford's replica Fokker Dr.I and, incredibly for such a long-running show, the AeroSuperBatics Wingwalkers. B-17G *Sally B* heads the regulars in its 50th anniversary display season. The Red Arrows and Typhoon will be there on both days, too.

TICKETS AND INFORMATION:
www.oldbuckenhamairshow.com (Note: admission by advance ticket only)

Melun's resident Vampires make for a fine sight — as does the airfield's spectacular hangar architecture. BEN DUNNELL

Paris-Villaroche Air Legend

**Melun-Villaroche, France |
Saturday 6-Sunday 7 September**

One of France's most historic airfields, with an illustrious test-flying background, Melun-Villaroche has hosted the Air Legend show for seven years and seen it develop into an occasion often lauded among the very finest on the European calendar. It's not solely a warbird event, though — both piston and jet — they do take a big share of the programme. The French military has a big part to play as well, and has provided quite a few of the highlights in seasons gone by. It was too early at press time to go into any specifics, however.

TICKETS AND INFORMATION: *airlegend.fr*

The Victory Show atmosphere summed up. KEY/JAMIE EWAN

The Victory Show

**Foxlands Farm, Cosby, Leicestershire |
Friday 29-Sunday 31 August**

Saying this is 'more than just an airshow' barely covers it, for anybody with an interest in World War Two military history in any of its guises will find something to enthral them at the Victory Show. The 100-acre site at Cosby's Foxlands Farm becomes home for this long weekend at the end of August to an immense array of historic military vehicles, equipment and suitably attired re-enactors covering virtually every different Second World War theatre, a huge mock battle being the prime feature of both weekend days while Friday is a schools' day. But the aerial activity is of rare quality too, the somewhat restricted nature of the displays that can be put on at the venue being more than compensated for by the superb machines that appear and the opportunity to see many of them — up to C-47 and Catalina size — operating off the close-at-hand grass strip. The fleet in the hands of Air Leasing/Ultimate Warbird Flights is especially well-represented each year. The all-round effect is to immerse one in the 1939-45 period.

TICKETS AND INFORMATION:
www.thevictoryshow.co.uk

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BARDAHL Special

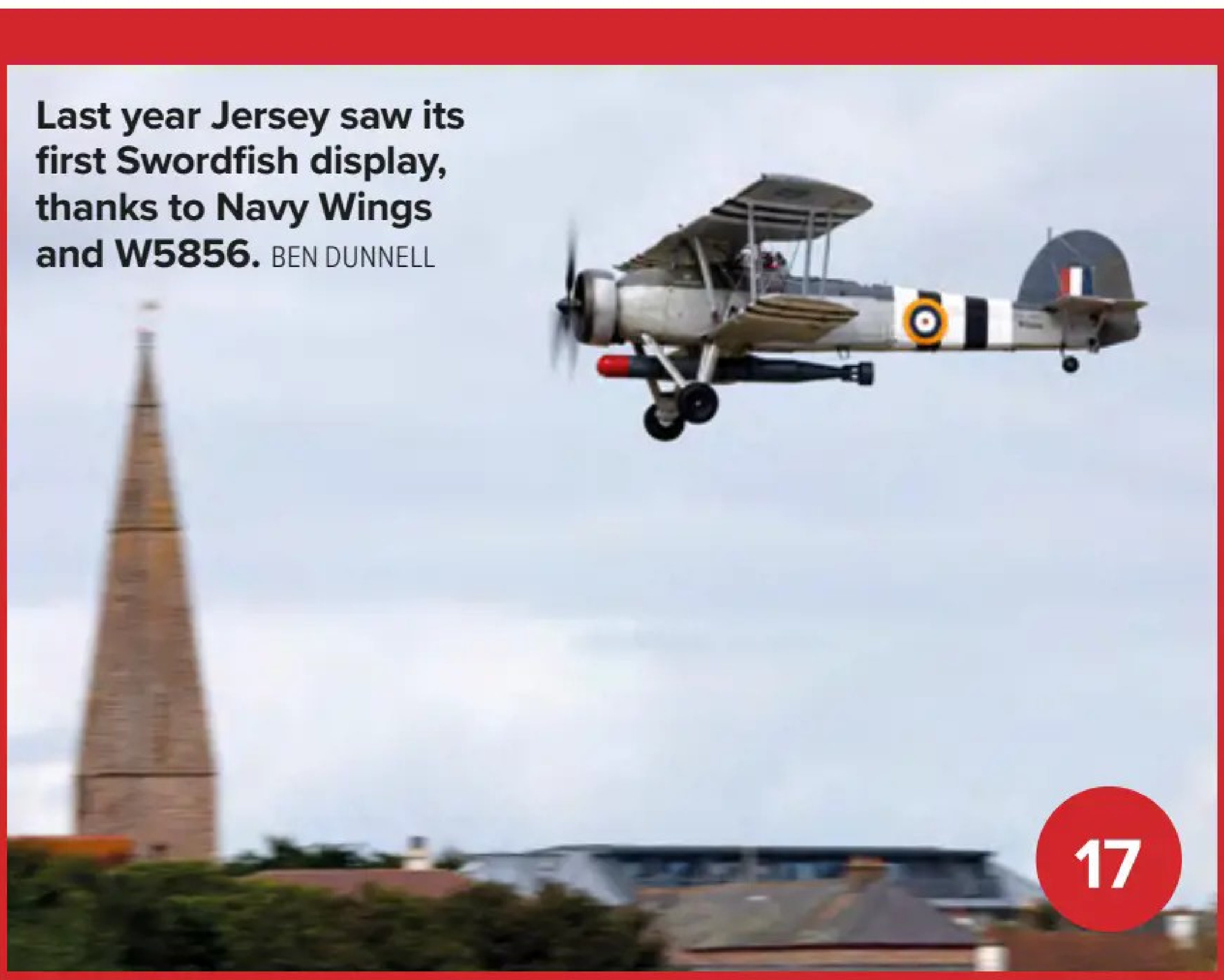
P-51 *Bardahl Special* is such an historic Reno racer. How will it fare at Roswell? ROGER CAIN

National Championship Air Races and Air Show

Roswell Air Center, New Mexico, USA | Wednesday 10-Sunday 14 September

It will be fascinating to see how the National Championship Air Races fare at their new venue after decades at Reno. Will they attract the same sort of support in a different state, whether in terms of aircraft or spectators — and especially after a year's break? As before, there will be seven racing classes: Formula 1, T-6, Jet, Biplane, Sport, STOL Drag and the big one, Unlimited. Steven Hinton took the Unlimited category in 2023 with the *Bardahl Special* Mustang, albeit via setting the fastest qualifying time due to the premature end to the meeting. Can anyone reclaim his crown?

TICKETS AND INFORMATION: *airrace.org*



Last year Jersey saw its first Swordfish display, thanks to Navy Wings and W5856. BEN DUNNELL

Jersey International Air Display

St Aubin's Bay, St Helier, Jersey | Thursday 11 September

As a rule, Jersey's flying programme could never be mistaken for any other, such is the enthusiasm of its organiser Mike Higgins for seeing the less-than-ordinary and going the extra mile. For the past few years, funding issues have seen the line-up being somewhat scaled back, but in 2025 Mike is hopeful of mounting a full four-hour show again, just as always used to be the case. The return of the Red Arrows after they missed last year on tour in Canada, and of the RAF Typhoon for the first time since 2021, provide a good foundation on which to build. It's in the acts from around Europe that Jersey really marks itself out, and this year they're already being sought.

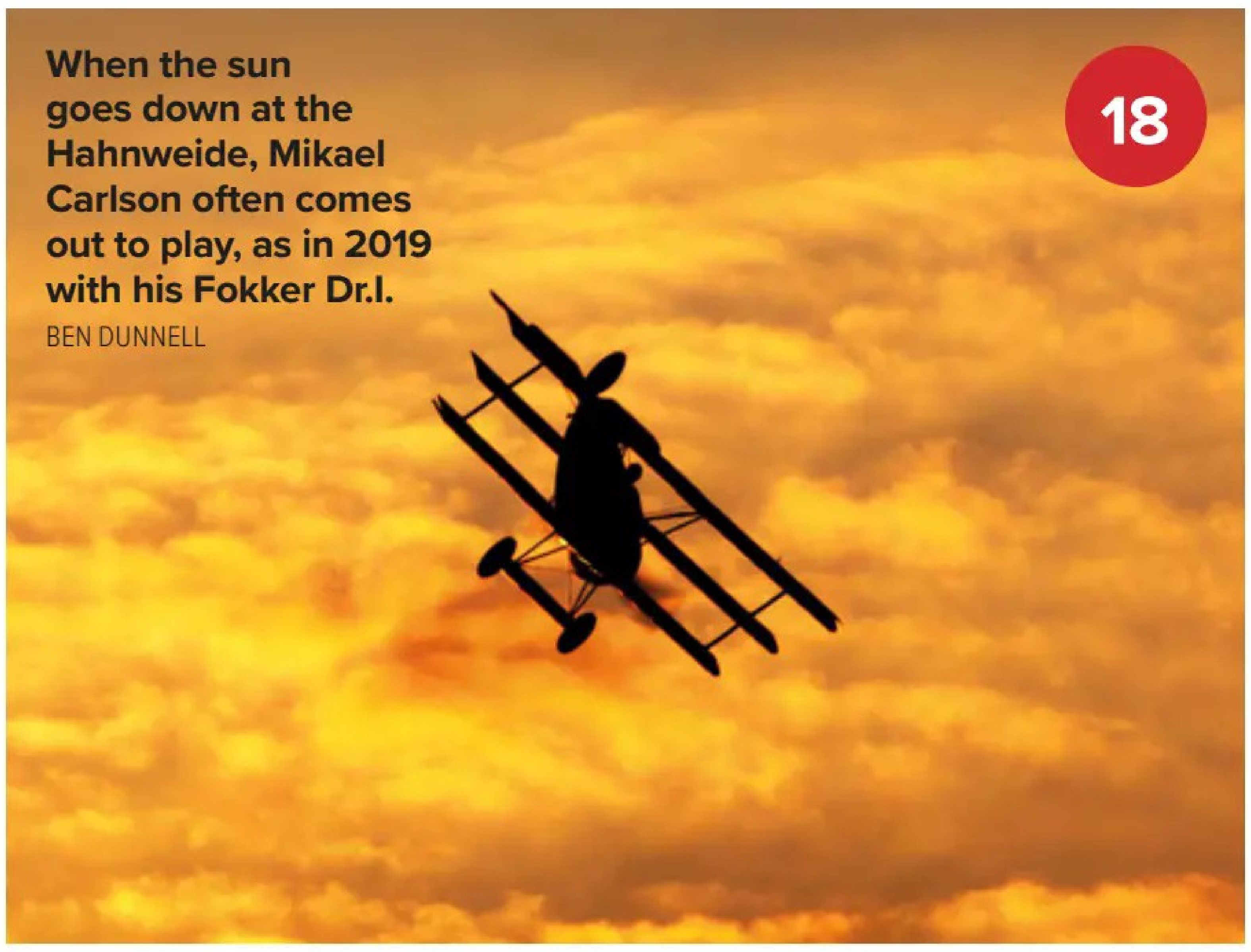
INFORMATION: *www.jerseyairdisplay.org.uk*

Oldtimer Fliegertreffen Hahnweide

Kirchheim unter Teck, Germany | Friday 12-Sunday 14 September

What a welcome return to the calendar for a vintage aviation occasion of the highest calibre. Last held in 2019, the Oldtimer Fliegertreffen at the historic Hahnweide — an all-grass aerodrome most famed as a gliding site — not far from Stuttgart combines an enormous fly-in with a major air display, aircraft from across Europe in attendance. Friday is largely an arrivals day, but still with a substantial show element. Saturday truly sees the Hahnweide coming into its own, the display beginning in early morning and stretching into the evening, concluded by the Red Bull Blanix glider team giving a pyrotechnic performance. On Sunday many aircraft gradually take their leave, though there's another lengthy airshow, finishing earlier in the day. One change from previous form is that, for safety and security reasons, no public access to the flightlines will be permitted. However, the traditional German feel of the event will absolutely remain, allowing one to enjoy good food and beer while watching the goings-on.

Aircraft highlights are many. Eberhard Thiesen's Bf 109 E-4 will be there, while the Messerschmitt Stiftung will fly one of its Bf 109 Gs, the Me 262 and the HA-200 Saeta out of their Manching base. The Flying Bulls are providing P-38, P-51, Corsair and Harvard, and Georg Raab is sending his whole Flying Legends fleet including Spitfire IX MH415, Corsair and P-51. The likes of Bücker and Klemm types are set to gather in multiples — and don't miss the trio of pleasure-flying Junkers F 13 replicas from Switzerland.



When the sun goes down at the Hahnweide, Mikael Carlson often comes out to play, as in 2019 with his Fokker Dr.I. BEN DUNNELL

TICKETS AND INFORMATION: *www.oldtimer-hahnweide.de*

International Sanicole Airshow

Leopoldsburg, Belgium | Saturday 13-Sunday 14 September

Airshows in the Benelux countries are few and far between these days, but Sanicole bucks that trend. What it manages to do at a fairly small grass airfield never ceases to impress, attracting the cream of Europe's military and civilian display acts, plus some from further afield. The sunset and night show takes place on Saturday, and the full eight-hour flying display on Sunday. Items announced as of late March included the Red Arrows, Czech Air Force Gripen, Frédéric Akary's Sabre, and Tony de Bruyn's Bronco, which will be part of a theme marking 50 years since the end of the Vietnam War.

TICKETS AND INFORMATION: *www.sanicole.com*

19
U.S. AIR FORCE

Frédéric Akary plans to base his Canadair-built Sabre in the UK for the second half of the season, and will visit Sanicole as part of the trip. BEN DUNNELL

The Malta Aviation Museum's Tiger Moth features regularly in the island's airshow. ALAMY

Malta International Airshow

Malta International Airport | Saturday 27-Sunday 28 September

Various venues on the illustrious Mediterranean island have been used for the airshow organised by the Malta Aviation Society, but it's now established once more at the international airport — otherwise known as Luqa. Early confirmations are all from Germany's Luftwaffe: two EF2000 displays from different units and the new Tornado demo. While historic aircraft aren't usually too big a feature, the airshow provides a fine excuse to visit the excellent Malta Aviation Museum at Ta' Qali.

TICKETS AND INFORMATION: *maltairshow.com*

FIT FOR THE FUTURE

EVENTS FOCUS

With a new-look display calendar for the 2025 season and its most ambitious participation for a long time, the Shuttleworth Collection is showing it's not afraid to shake its airshows up. But what's the rationale behind this change? **WORDS AND PHOTOGRAPHY:** BEN DUNNELL

Visitors on the line for the inaugural Shuttleworth Festival of Flight: the Aircraft Restoration Company's Spitfire PRXI, the Casques de Cuir's F4U-5NL Corsair, the W Aircollection's Spitfire XIV and P-51D *Miss Helen*, then owned by Robert Tyrrell.

Hopefully 2025 will allow the Bristol Boxkite and Avro Triplane replicas greater chances to perambulate.

How do you change an institution like the Shuttleworth airshow? With care and sympathy, certainly. But also with the ambition to go beyond what's gone before, and ensure a strong future. So much about staging events has altered in the past few years, let alone the more than 60 for which they've been taking place at Old Warden. Audience expectations have evolved, and where once laying on a flying display of the collection's famed aeroplanes and the odd visitor might have been enough, that no longer holds. Yet in responding to that, in drawing people through the gates not just once but hopefully to several of the venue's displays each season, it's vital not to lose sight of the underlying ethos.

There's a lot of experience to draw on within the Shuttleworth structure, but sometimes it can take a fresh pair of eyes to identify what needs doing. Head of visitor operations Marc Boult joined in 2022, and says, "it was quickly identified that there were no intuitive ways of building new audience bases into the shows". Solving that would bring the need to give the ground content a major revamp, and to refresh the flying side at the same time. With multiple shows a year, making each one feel distinctive isn't easy.

"I started looking at what our visitor base looked like", says Marc. "At the time, it was predominantly only the aviation enthusiasts who were coming in. Our child numbers on shows were very, very small… With that, we began having an open discussion about what it looked like in terms of an offering. What days are the right days? Why would a family want to come out on a Sunday rather than a Saturday? The research in the wider visitor attraction world that I could look into" — not least crowd figures for two-day airshows — "suggested that Saturday is a preferential day for a family to come out and visit on.

"We trialled the format changes last year, with a small implement of activity on the Saturday and an airshow on the Sunday. We know that didn't work and it was a confusing message to the public. The format change for this year was brought on by all of that information, the demographic and the understanding of what the customer wants. It suggested that an extended Saturday display, with a wider offering on the ground, would appeal to a much larger audience of children, families and the enthusiast."

At the same time, another factor came into play. In 2024 only one dedicated evening airshow was held at Shuttleworth, leaving aside the Flying Proms. Visitor numbers for these events, as wonderful as they were, had rarely been viable — and all sorts of formulas had been tried, from making them Old Warden-based aircraft only as a means of reducing cost, to elevating them almost to full airshows. The enthusiast feedback, says Marc, "was that they missed the evening shows. Even though they weren't well-attended, they were missed."

> **“Making each show feel distinctive isn't easy”**

As it turned out, due to wind conditions, that evening show in July 2024 was the only time any of Shuttleworth's famed 'Edwardians' gave a public display all year, a singleton appearance by the Avro Triplane. Those types, of course, prefer the calmer evening air. Not being able to fly them brings with it an issue of pilot currency, so there was plenty of impetus behind finding a solution. "We asked how we could cost-effectively put on an evening element", Marc relates, "without having to get the separate display permissions and the separate [road] closures."

For 2025, therefore, while the Season Premiere Air Show on 11 May and 5 October's Race Day Air Show will be 'standard' Sunday afternoon affairs, the Military Air Show on 31 May, the Summer Air Show on 26

The DH9 from the Historic Aircraft Collection on its one previous visit, in 2019. A return is booked for early May.

July and Best of British on 30 August are all taking place on Saturdays, and will take in an evening segment. After about three-and-a-half hours of flying from 14.00hrs, there will be an interval before the flying programme resumes. To help fill that time, entertainment will be laid on including a free funfair, live music, and a variety of stunt shows, circus skills for youngsters and more depending on the event. Augmenting the main pre-show vehicle parade along the crowdline, a second, smaller one focusing on one aspect of the Shuttleworth heritage will take place in front of the hangars. The evening display will then last for about an hour, beginning at 19.30 in May and July, and 19.00 in August to make the most of daylight.

But last year also brought another innovation: the Festival of Flight, Shuttleworth's first full multi-day airshow for a long while. It attracted headline RAF participation from the Red Arrows and Typhoon, it brought in overseas warbirds courtesy the Corsair and Spitfire XIV from La Ferté-Alais, and it made use of the entire site, with entertainment and refreshment at Shuttleworth House — the Victorian mansion that was home to the Shuttleworth family — in addition to the aerodrome. There was a real feeling of plenty about the weekend, and it will be repeated in 2025, albeit without the Friday fly-in element which wasn't so well-patronised. Both Saturday and Sunday will include afternoon and evening displays.

The attendance of the French warbirds was a sign of the ambition brought to Shuttleworth's line-ups by new display organiser James Butt. Previously part of the engineering team, he's been going to Old Warden since childhood, as well as visiting many other shows at home and abroad. "I knew what I liked in an airshow", he says, "and what I'd like to see here. My focus for last year was what had never been here before, or what had not been here for quite a few years". Such as the Historic Aircraft Collection's Fury I, the Vampire FB6 from the Norwegian Air Force Historical Squadron and Aerial Speed Icons' red-and-silver Spitfire XIV all fitted into the former category. And, he adds, "It's very much the same again this year."

Lysander, Traction Avant, SOE re-enactors and dusk setting in: an evocative spectacle set for repetition.

Don't think this is simple, though. "It is quite difficult to try and keep things fresh in this industry", says James. "You have to rely on operators bringing out new aircraft or restorations, or new aircraft coming into the country… But it's been really good in the past two years to focus on new aircraft coming here."

Gaining the foreign representation is one way of doing that, but it's not just a question of booking the aeroplanes and their turning up to fly. For a start, their pilots have to obtain a UK display authorisation. As James comments, "I think a lot of airshow organisers have realised now there is a lot out there in Europe. I know it has been a struggle with DAs, but there are DAEs [display authorisation evaluators] in Europe". There are greater costs with overseas participation, particularly when it comes to the transits; again, though, there are ways of ameliorating that. Shuttleworth has worked with other organisers to arrange short tours, as with the French Spitfire and Corsair which went to Sywell beforehand. More of that, with different aircraft, is happening in 2025.

So, what will you see in the season to come? A new look to the showground, for a start. The paddock area nearest the control tower will feature a Clayton & Shuttleworth heritage section around the hangars — no doubt the newly acquired 1905 Wolseley once owned by Dorothy Shuttleworth, mother of collection founder Richard, will be there. The next area along will act as a central 'hub' with caterers, traders, picnic areas and an information point. It's also where the extensive funfair will be located, this

Steve Jones's DH71 reproduction looks like it's doing top speed standing still. Having moved in at Old Warden, it sits among fellow, better-known racers.

There's nowhere more impactful, surely, at which to watch BBMF Lancaster flybys.

present at each show except the Flying Proms and, like all the ground activities, included in the ticket price. Some of the layout change is in anticipation of 'Martyn's Law', the legislation aimed at improving security at public venues and events, but it is also intended to look more inviting, especially to Old Warden neophytes. To that end, pre-visit communication, signage and maps are being enhanced.

And in the air, there will be delights galore. To begin with, the Season Premiere is due to see Steve Jones's DH71 Tiger Moth monoplane reproduction — now an Old Warden resident — making its airshow debut, while it will be only the second visit for the HAC's DH9, and the first time at Shuttleworth for Fighter Aviation Engineering's Lockheed 12A. The Military Air Show brings in the silver P-36C and P-40C from The Fighter Collection, again first-footing at the venue, together with the Commemorative Air Force's R4D-6S *Ready 4 Duty*, over from the USA, which will be on static display for the Season Premiere.

As with its inaugural edition, the Festival of Flight has a very different bill on each day — it is a festival, after all. The idea is to fly all available Shuttleworth aircraft at least once over the weekend, with those that appear twice often doing so in varying combinations. Again there will be international stars, the Fokker D.XXI of Egmond Vintage Wings being set for what should be the British debut of this Dutch fighter, and Georg Raab bringing his F4U-5NL Corsair from Germany. The R4D will be in this show too.

Having the Red Arrows at the Festival of Flight last season was a big public draw, and it should be again.

Having the RAF allocate the Red Arrows on Saturday and Typhoon on Sunday for the second Festival of Flight running is an indication of Shuttleworth's increased standing within the airshow industry. Indeed, they are part of the most extensive air force participation ever seen at Old Warden across a season. Last year the start time of the display was brought forward to accommodate them around other commitments, but to avoid any visitor confusion 2025's show will begin at the usual 14.00 on both days.

Unprecedentedly, the Typhoon is back for a second appearance at the Summer Air Show, where an older jet, Frédéric Akary's Canadair Sabre, will provide a contrast. Adding high-octane aerobatics, Rich Goodwin's Jet Pitts makes its initial Shuttleworth visit to this event. One of too many Lancaster appearances to mention comes at the Flying Proms, along with pyrotechnic entertainment courtesy the Firebirds duo of Vans RV-4s. Best of British has the RAF's solo Grob Tutor and the North Weald-based Lynx AH7, and Race Day a second showing of the year — after the Summer Air Show — of the BBMF trio.

We shouldn't forget the home team, most of which will be in action. As ever, some aircraft will be rested for a season, and it's not certain the Sea Hurricane will have had a technical issue sorted, but the Bristol F2B, English Electric Wren, Blackburn B-2 and DH60 Moth G-EBLV are back on the roster. As the oldest flying example, G-EBLV will surely play a prominent part in another 2025 event worth mentioning, the DH60 centenary celebration on 31 July-1 August. Presented by the de Havilland Moth Club, it will encompass a fly-in and, on the Friday only, a short display.

How the Shuttleworth aircraft are used in the shows is itself the subject of some new thinking. The most recent Race Day had two early Richard Shuttleworth acquisitions, the DH60X and Sopwith Pup, airborne together while some of his original vehicles paraded along crowd front. It's an idea inspired by James Butt's visits to La Ferté-Alais, where ground and air are juxtaposed in a similar way. Airshows can be so much better when their organisers actively go to other events! Among the ideas for 2025 are a 'secret missions' combine of Lysander and Lockheed 12, and an expanded Special Operations Executive scenario with the Lysander at twilight.

Oh, and here's another touch that should please many of you reading this. "Obviously", says James, "here at Shuttleworth we are very lucky from the photographers' point of view with the sun being behind the crowd. The evening airshows were incredible for light if it was a lovely day, and you always want a star item at an evening show, so this year we will have visiting aircraft in every evening element of our flying displays, along with the 'Eds' and some other collection aircraft. That's a very big change, but we understand here that the light gets better as the day goes on, and it's the perfect venue for it. We're still focusing on our enthusiasts while also trying to grow our audiences with families". What will fill the evening slots is still to be finalised, but the two silver Curtiss fighters will be among them. Let's hope for sunshine.

A combination of very fortunate weather and some splendid showpieces led to last season being among Shuttleworth's most successful for some years. In particular, it's heartening to hear there has been a circa 200 per cent rise in the number of children — who have free admission — attending. Hopefully many of them will continue to be drawn in, so they come to love Shuttleworth in just the same way as we do.

For more information and to book tickets, visit www.shuttleworth.org

EXPERIENCE VINTAGE AIRCRAFT!

Whether in the form of introductory flights in vintage trainers, pleasure flights in classic airliners, full-blown warbird flight experiences in some of the most famous types or taxi rides in wartime legends, you can acquaint yourself with the delights of a huge variety of live historic aeroplanes around the UK in the most immersive manner possible. Here's our guide to where you can go, and what you can sample

COMPILER: BEN DUNNELL

Gallagher
VOU

The 'Grace Spitfire', famed MkIXT ML407, remains the flagship of Ultimate Warbird Flights at Sywell.
DARREN HARBAR

GEORGE ROMAIN

Aerial Collective

LOCATION: IWM Duxford, Cambridgeshire
AIRCRAFT: Bristol Blenheim IF, Hawker Hurricane IIb, Supermarine Spitfire IX Trainer, Westland Lysander IIIa

The flight experiences offshoot of the renowned Aircraft Restoration Company and operating from its facilities at Duxford, Aerial Collective is best-known for its two-seat Spitfire IXs, PT462 and PV202 — they undertake solo sorties, two-ship formations and tailchases with ARCo's Hispano Buchón, representing a Messerschmitt Bf 109. For 2025's Battle of Britain 85th anniversary, PT462 has been newly painted as the Spitfire I flown in 1940 by Duxford-based No 19 Squadron pilot Brian Lane. The unique two-seat Hurricane is made available in partnership with Hurricane Heritage (see separate entry), and can fly in formation with one or two Spitfires. Very special indeed are the opportunities to get airborne in the Lysander and the Blenheim, two of ARCo's flagships — availability of the latter is limited, so don't delay in checking.

PRICES, BOOKING AND INFORMATION:
Telephone 01223 653830, www.aerialcollective.co.uk

DARREN HARBAR

Aero Legends

LOCATIONS: Headcorn, Kent; North Weald, Essex; Compton Abbas, Dorset and Old Warden, Bedfordshire
AIRCRAFT: BAC Strikemaster, de Havilland DH82A Tiger Moth, Douglas C-47A Skytrain (taxiing only), North American T-6G Texan, Supermarine Spitfire IX Trainer, Thruxton Jackaroo

One of the most varied line-ups of aircraft available for flight experiences can be found in the Aero Legends stable. The two-seat Spitfires, NH341 and the recently restored MJ444, execute solo or formation passenger rides tailored to each location, and there are 'fly with a Spitfire' experiences alongside a small passenger aeroplane or helicopter. The Spitfires can also join up with a Strikemaster from Hawarden-based North Wales Military Aviation Services, operated out of North Weald by the new Jet Legends offshoot; one or both of the NWMAS Strikemasters perform passenger sorties of their own. Flights are offered in T-6s, Tiger Moths and the Jackaroo, while the C-47s give a limited number of taxi rides at North Weald. New for 2025 are the operations from Old Warden, involving the Spitfires and a T-6.

PRICES, BOOKING AND INFORMATION:
Telephone 01622 812830, www.aerolegends.co.uk

Anglian War Birds

LOCATION: Earls Colne, Essex
AIRCRAFT: Boeing Stearman PT-13D Kaydet, North American AT-6C Harvard IIa

A duo of classic American wartime-era trainers — both well-known on the display circuit — offer trial lessons from Earls Colne. Existing pilots wanting to step up to a powerful piston classic can also perform a full Harvard type conversion on this US Navy-schemed aeroplane, a rare wartime-manufactured example actually built by North American.

PRICES, BOOKING AND INFORMATION:
Telephone 01787 223676, www.anglianwarbirds.co.uk

BEN DUNNELL

BROOKLANDS AVIATION LTD
SYWELL

KEY/MARTIN NEEDHAM

Thomas Castle Aviation Heritage

LOCATION: Sywell, Northamptonshire
AIRCRAFT: de Havilland DH82A Tiger Moth

Tiger Moths have been an almost constant presence at Sywell since the 1930s. Half-hour trial flights are available in the aircraft also used for the Thomas Castle Aviation Heritage Scholarship — see pages 124-128.

PRICES, BOOKING AND INFORMATION:
Telephone 01604 801620, www.tcah.co.uk or www.sywellaerodrome.co.uk

BEN DUNNELL

Cambridge Flying Group

LOCATION: Old Warden, Bedfordshire
AIRCRAFT: de Havilland DH82A Tiger Moth

Now well-established at its new Old Warden base, the Cambridge Flying Group has a perfect home from which to operate its two Tiger Moths — G-AHIZ and RAF Battle of France veteran G-AOEI — in just the manner it's made its own since the 1950s. They give air experience and introductory flights as well as, famously, training ab initio students up to PPL standard. For details of the Coachmakers flying scholarship with which the group is involved, see the item on page 122.

PRICES, BOOKING AND INFORMATION:
Telephone 07787 427589, www.flyvintage.co.uk

BEN DUNNELL

Classic Wings

LOCATION: IWM Duxford, Cambridgeshire
AIRCRAFT: Boeing Stearman Kaydet (wingwalking only), de Havilland DH82A Tiger Moth, de Havilland DH89A Dragon Rapide, North American Harvard, Piper PA-18 Super Cub, Supermarine Spitfire IX Trainer

Classic Wings has been operating for 35 years now, always from Duxford, and thus is one of the most experienced pleasure flying companies of them all. It still offers its traditional mainstays, in the form of sightseeing trips over Cambridge, Ely, Newmarket and London aboard the Dragon Rapides, and Tiger Moth and Harvard trial lessons. But two-seat Spitfire rides are also on the agenda, as well as Harvard or Rapide/Spitfire 'wing-to-wing' experiences. Training courses up to Spitfire solo standard afford the opportunity to take your vintage flying to another level. And adding to the activities in 2025, Classic Wings has teamed up with new wingwalking experience operator Ethel Dares for flights on the wing of its Boeing Stearman Kaydet.

PRICES, BOOKING AND INFORMATION:
Telephone 01223 837453, www.classic-wings.co.uk

EAGLESCOTT AIRFIELD

Eaglescott Airfield

LOCATION: Eaglescott, Devon
AIRCRAFT: de Havilland DH82A Tiger Moth

A charming aerodrome in Devon, and summer-evening Tiger Moth flights between May and the end of August: what's not to like? They take in the north Devon beaches used by Allied forces for training purposes in the run-up to D-Day.

PRICES, BOOKING AND INFORMATION:
Telephone 01769 520404, www.eaglescott-airfield.com

Fenland Flying School

LOCATION: Fenland, Lincolnshire
AIRCRAFT: de Havilland Canada Chipmunk

Air experience flights in the Fenland-based Chipmunks — an OGMA-built, ex-Portuguese Air Force machine and a former RAF T10 — last between 20 minutes and an hour. Tailwheel conversion training, and more advanced instruction including formation flying, is offered too.

PRICES, BOOKING AND INFORMATION:
Telephone 01406 540461, www.fenland-flying-school.co.uk

BEN DUNNELL

Finest Hour Experiences

LOCATIONS: Yarmouth Heliport, Norfolk
AIRCRAFT: de Havilland DH82A Tiger Moth

It was a big change for Finest Hour, moving to Yarmouth Heliport at North Denes after so long at Bicester, but it's now settled in at its new base and continues to offer Tiger Moth flights, always using professionally qualified and very experienced instructors with military, airline and/or display backgrounds. A CAP 10 provides a more modern aerobatic experience. Themed flights in the Tigers take in World War One Royal Naval Air Service sites, Thorpe Abbotts — the wartime home of the 100th Bomb Group — and locations relating to No 100 Group, RAF, as well as the beautiful Norfolk and Suffolk coastlines.

PRICES, BOOKING AND INFORMATION:
Telephone 07415 735683, www.finesthourexperiences.co.uk

LEWIS HURLEY

RICHARD PAVER

Fly a Spitfire

LOCATIONS: London Biggin Hill Airport, Kent; Blackbushe Airport, Hampshire; Blackpool Airport, Lancashire; Cotswold Airport, Gloucestershire; Norwich Airport, Norfolk; Swansea Airport, Wales
AIRCRAFT: North American P-51D Mustang, Supermarine Spitfire VIII Trainer and IX Trainer

A trio of two-seat Spitfires are used for flight experiences — MkIXs MJ627 and TE308, and the only MkVIII Trainer, MT818, which is being painted in US markings. Needless to say, there's a very wide range of flight offerings from Biggin itself, taking in such landmarks as Beachy Head, the White Cliffs of Dover and Battle of Britain airfields. Newly imported P-51D *Moonbeam McSwine* joins the line-up in 2024. But apart from the main Kent base, the Spitfires now perform rides out of five other airports around the UK.

PRICES, BOOKING AND INFORMATION: *Telephone 01959 576767, flyaspitfire.com*

BEN DUNNELL

Huey Helicopter UK

LOCATION: Wesham, Lancashire
AIRCRAFT: Bell UH-1H Iroquois

Just as much of a warbird as anything from the Second World War, MSS Holdings' Vietnam War veteran UH-1H 'Huey' has in excess of 550 combat hours to its name. You can go on board one of the greatest military helicopters of all time for a 45-minute trip.

PRICES, BOOKING AND INFORMATION: *Telephone 01772 671950, www.huey.co.uk*

DARREN HARBAR

Hurricane Heritage

LOCATION: White Waltham, Berkshire
AIRCRAFT: Hawker Hurricane IIb, Noorduyn Harvard IIb

As we covered in depth last month, the world's only two-seat Hurricane, 'BE505' *Pegs*, is now being operated by Hurricane Heritage, owners of Battle of Britain veteran MkI R4118. Based out of White Waltham, several different durations of flight are available in the aeroplane, the longest going as far as the Isle of Wight and the Needles. A tailchase experience involves the Hurricane being 'intercepted' by a Bf 108. Harvard FE511 also performs passenger flights, as well as conversion training courses.

PRICES, BOOKING AND INFORMATION: *Telephone 01628 290282, www.hurricaneheritage.com*

Lincolnshire Aviation Heritage Centre

LOCATION: East Kirkby, Lincolnshire
AIRCRAFT: Avro Lancaster VII, de Havilland Mosquito NFII (both taxiing only)

It may not be possible to fly in the two main attractions at East Kirkby, but the taxi rides available in the LAHC's own Lancaster *Just Jane* and Tony Agar's Mosquito night fighter provide an experience every bit as visceral as taking to the air. Special events are held throughout the season, including the East Kirkby Air Show on Saturday 2 August.

PRICES, BOOKING AND INFORMATION: *Telephone 01790 763207, www.lincsaviation.co.uk*

BEN DUNNELL

GETTY

Perry Air

LOCATION: Shoreham Airport, West Sussex
AIRCRAFT: de Havilland DH82A Tiger Moth, Piper PA-18-90 Super Cub, Stampe SV4C

This long-established flying club and school has Tiger Moth G-AMNN as its vintage flagship, *Spirit of Pashley* having been restored at its Shoreham base. It, a Stampe and a Super Cub provide trial lessons. In addition, Perry Air has a Lancaster I flight simulator.

PRICES, BOOKING AND INFORMATION:
Telephone 01273 463081, www.perryair.co.uk

DARREN HARBAR

Spitfires.com

LOCATIONS: Goodwood, West Sussex; Bournemouth Airport, Dorset; Dunkeswell, Devon; Guernsey Airport, Channel Islands; Hawarden Airport, Flintshire, Wales; Jersey Airport, Channel Islands; Leeds East Airport, North Yorkshire; Newcastle Airport, Newcastle upon Tyne; Perth Airport, Scotland; Solent Airport, Hampshire
AIRCRAFT: Supermarine Spitfire IX Trainer

Spitfires.com — then known as the the Boultbee Flight Academy — pioneered passenger flights in the Supermarine fighter on the introduction of the SSAC (Safety Standards Acknowledgment and Consent) rules in the UK, and provision of training courses on the aircraft. All of this it still offers with its own two-seat MkIX, SM520, now joined by the recently restored BS410 and ML295. Goodwood remains the operation's main base, and the home of its highly acclaimed Spitfire simulator. But in addition Spitfires.com has spread its wings to run flights from more locations than any other operator, as far afield as the Channel Islands.

PRICES, BOOKING AND INFORMATION:
Telephone 01243 531147, www.spitfires.com

DAVID WHITWORTH

Tiger Club

LOCATION: Damyns Hall, Essex
AIRCRAFT: de Havilland DH82A Tiger Moth

In keeping with its long traditions of open-cockpit taildragger flying, the Tiger Club gives experience flights from its Damyns Hall base near Upminster in its two Tiger Moths, G-ACDC and G-ASKP. Aerobatic trips in a CAP 10 are flown as well. And for those who decide to learn to fly themselves, the club can provide tailwheel, Tiger and aerobatic training.

PRICES, BOOKING AND INFORMATION: *Telephone 01708 524633, www.tigerclub.co.uk*

ALAMY

Tiger Flights

LOCATION: Eshott, Northumberland
AIRCRAFT: de Havilland DH82A Tiger Moth, de Havilland Canada Chipmunk T10

Northumberland is a lovely place to go flying in a vintage aircraft, and Tiger Flights has a pair of Tiger Moths, G-ANEZ and G-EMSY, in which to perform introductory flights. Joining them is a Chipmunk, WB569. The Tigers are used for training purposes as well, instructing existing PPL-holders in tailwheel differences, Tiger Moth type conversion and formation flying. Those who pass through successfully can use the Tigers for self-fly hire.

PRICES, BOOKING AND INFORMATION:
Telephone 01670 787881, www.tigerflights.co.uk

VIA KEVIN CRUMPLIN

Tiger Moth Training

LOCATION: Henstridge, Somerset
AIRCRAFT: de Havilland DH82A Tiger Moth

While this Henstridge-based operation, with its immaculate, camouflaged Tiger Moths, offers a full training syllabus on the de Havilland biplane, a major part of its activity involves trial lessons, requiring the buyer to become a temporary member of the training organisation. These are often flown in formation.

PRICES, BOOKING AND INFORMATION:
Telephone 07789 324319, www.tigermothtraining.com

Ultimate Warbird Flights

LOCATIONS: Sywell, Northamptonshire and London Oxford Airport, Oxfordshire
AIRCRAFT: Commonwealth CA-18 Mustang, Supermarine Spitfire IX Trainer

Operated in association with Air Leasing, Ultimate Warbird Flights flies passengers in D-Day veteran Spitfire ML407 — which made its maiden post-restoration flight as a two-seater 40 years ago this year, and continues to be operated in tribute to the late Nick, Carolyn and Richard Grace — and Australian-built Mustang *Jersey Jerk*, which joined the set-up in 2024. The recent importation from New Zealand of Spitfire MH367 will see it being added to the rides programme in due course. 'Spit' flights are operated from a dedicated facility at Oxford Airport as well as the main Sywell base. Premium experiences, tailored to customer requests, can see multiple aircraft in the air at once.

PRICES, BOOKING AND INFORMATION:
Telephone 01604 800570, warbirdflights.co.uk

DARREN HARBAR

BEN DUNNELL

Warbird Experience

LOCATIONS: Conington, Cambridgeshire and Fenland, Lincolnshire
AIRCRAFT: Auster AOP6, CCF Harvard IV

There's no mistaking Harvard *Wacky Wabbit*, with its Desert Air Force 'hack' colours and distinctive nose art. Its flights take place from Conington near Peterborough, among them various 'missions' and bespoke experiences; it performs 'fly alongside' sorties with a Hurricane, and gives pre-booked pleasure flights at Shuttleworth Collection airshows. Conversion courses are offered too. The Korean War veteran Auster AOP6 operates out of Fenland, and is the sole example of the type offering flight experiences in the UK.

PRICES, BOOKING AND INFORMATION:
Telephone 07717 534574, www.t6harvard.com

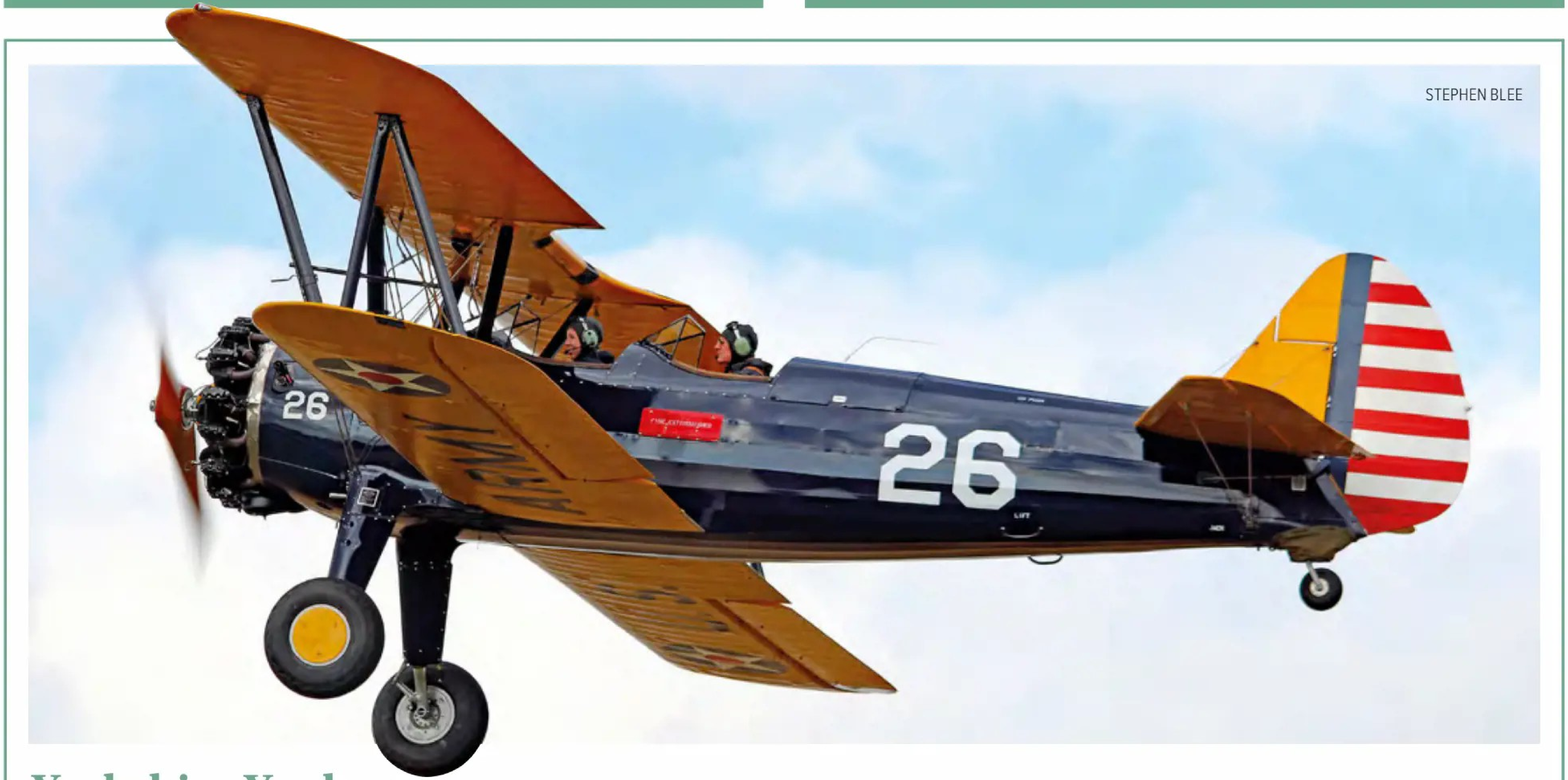
DARREN HARBAR

West London Aero Club

LOCATION: White Waltham, Berkshire
AIRCRAFT: de Havilland DH82A Tiger Moth, de Havilland Canada Chipmunk T10, Noorduyn Harvard IIb, Piper PA-18 Super Cub

Flights in the Harvard owned by Hurricane Heritage (see separate entry) are available through the WLAC. So too are Tiger Moth, Chipmunk and Super Cub flying experiences and trips in more modern aeroplanes.

PRICES, BOOKING AND INFORMATION:
Telephone 01628 823272, www.wlac.co.uk



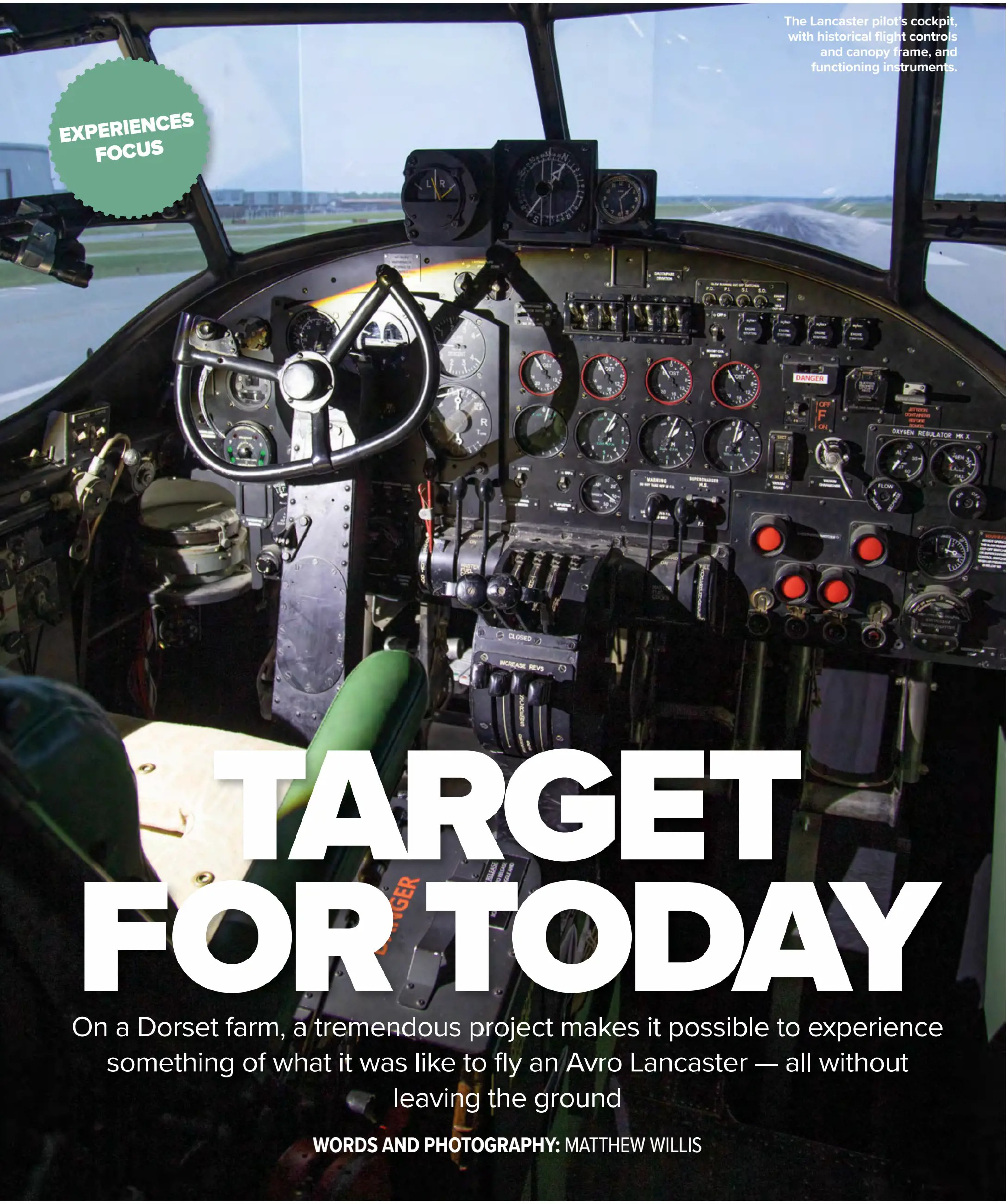
STEPHEN BLEE

Yorkshire Yankee

LOCATION: Breighton, North Yorkshire
AIRCRAFT: Boeing Stearman PT-17 Kaydet

A new addition to the ranks of flight experiences is Yorkshire Yankee, with 1945-vintage PT-17 Kaydet G-BAVO operating from that marvellous northern centre of vintage aviation, Breighton.

PRICES, BOOKING AND INFORMATION: *Telephone 07950 811293, www.yorkshireyankee.co.uk*



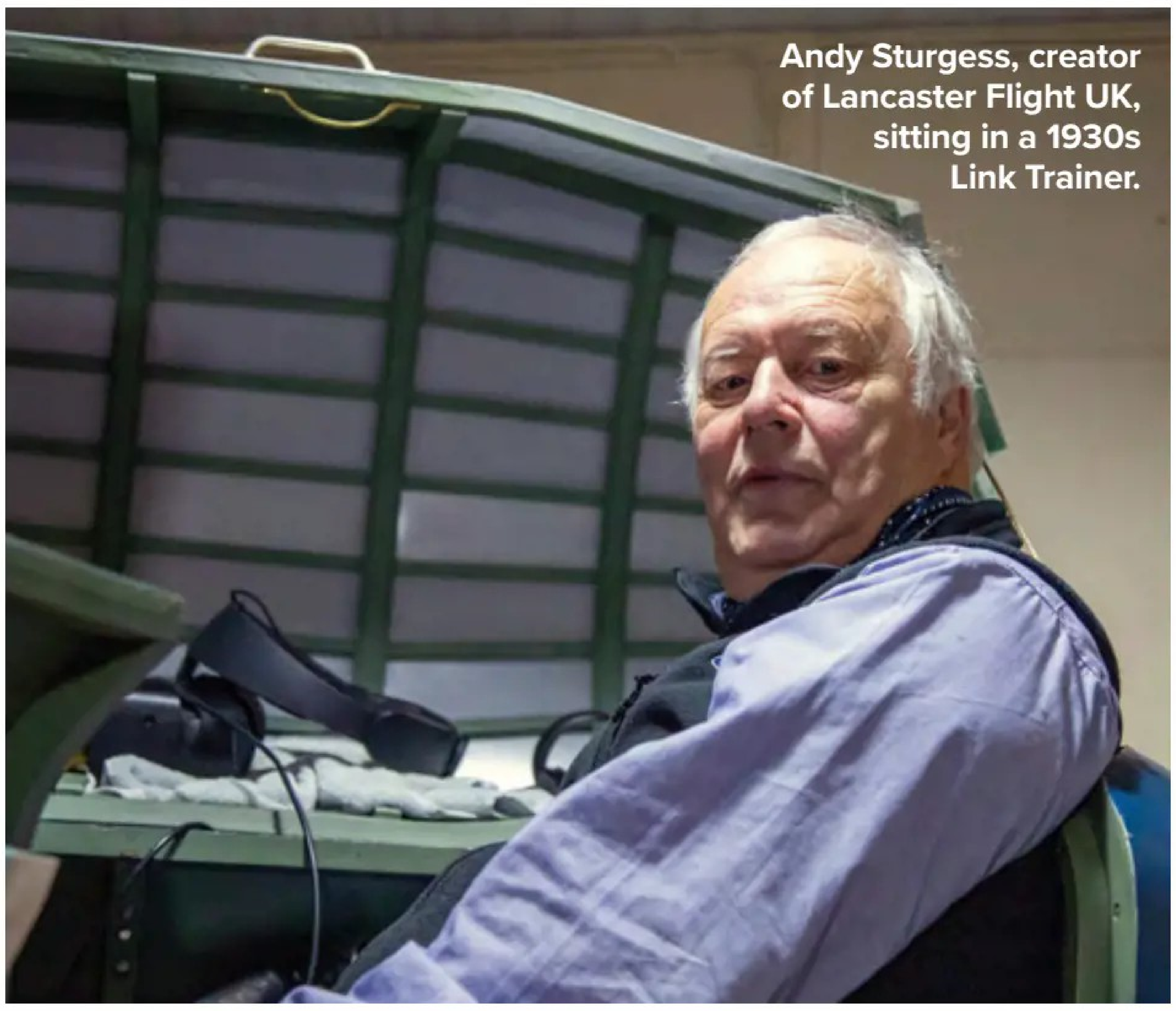
EXPERIENCES FOCUS

The Lancaster pilot's cockpit, with historical flight controls and canopy frame, and functioning instruments.

TARGET FOR TODAY

On a Dorset farm, a tremendous project makes it possible to experience something of what it was like to fly an Avro Lancaster — all without leaving the ground

WORDS AND PHOTOGRAPHY: MATTHEW WILLIS



Andy Sturgess, creator of Lancaster Flight UK, sitting in a 1930s Link Trainer.

To call Lancaster Flight UK a flight simulator does not remotely do it justice. The term conjures up images of computer screens and PC rigs which are nowhere close to the immersive, authentic experience offered by creator Andy Sturgess. It is surely the closest thing to flying a 1943 Avro Lancaster that's possible, short of taking the controls of PA474 or FM213 — and in some respects Lancaster Flight UK can get closer to the experiences of a wartime crew.

It arose through what Andy Sturgess calls, "A classic example of mission creep". Andy converted a lifelong passion for aviation — and in particular Bomber Command, with which his father served in World War Two — into a decades-long project to perfectly re-create a Lancaster fuselage and what it's like to fly one. Twenty years ago he had the idea of constructing a Lancaster instrument panel. That expanded to a pilot's cockpit, and then to include the navigator's and wireless operator's positions. The finished product took an estimated 10,000 hours to realise.

The 'simulator' is just a part of the Lancaster Flight UK experience. The immersion begins when you enter what looks on the outside like any of the buildings on Andy's farm in the rolling Dorset countryside, within sight of Compton Abbas airfield. On the inside, you find yourself in a completely convincing 1940s RAF station. "When you go through the door, you go back to 1943 — even the light switches", Andy says. Indeed, the Bakelite light switches and doorhandles in the corridor are all period items, as is the oxygen mask test rig, and the parachute harnesses hanging on 1940s hooks. The illusion is further enhanced by a perfectly replicated Link Trainer room, with one of the pre-war training devices set up as a simulator.

The Lancaster Flight UK tyro will be given all the information about their forthcoming 'flight' in the period-accurate briefing room. This is fitted out with authentic furniture and accoutrements, and examples of original and reproduction Lancaster equipment to help familiarise visitors ahead of their 'operation'. It is also the perfect way to immerse you in the world of 1943 before walking through the 'Flying Ops' door and into the machine.

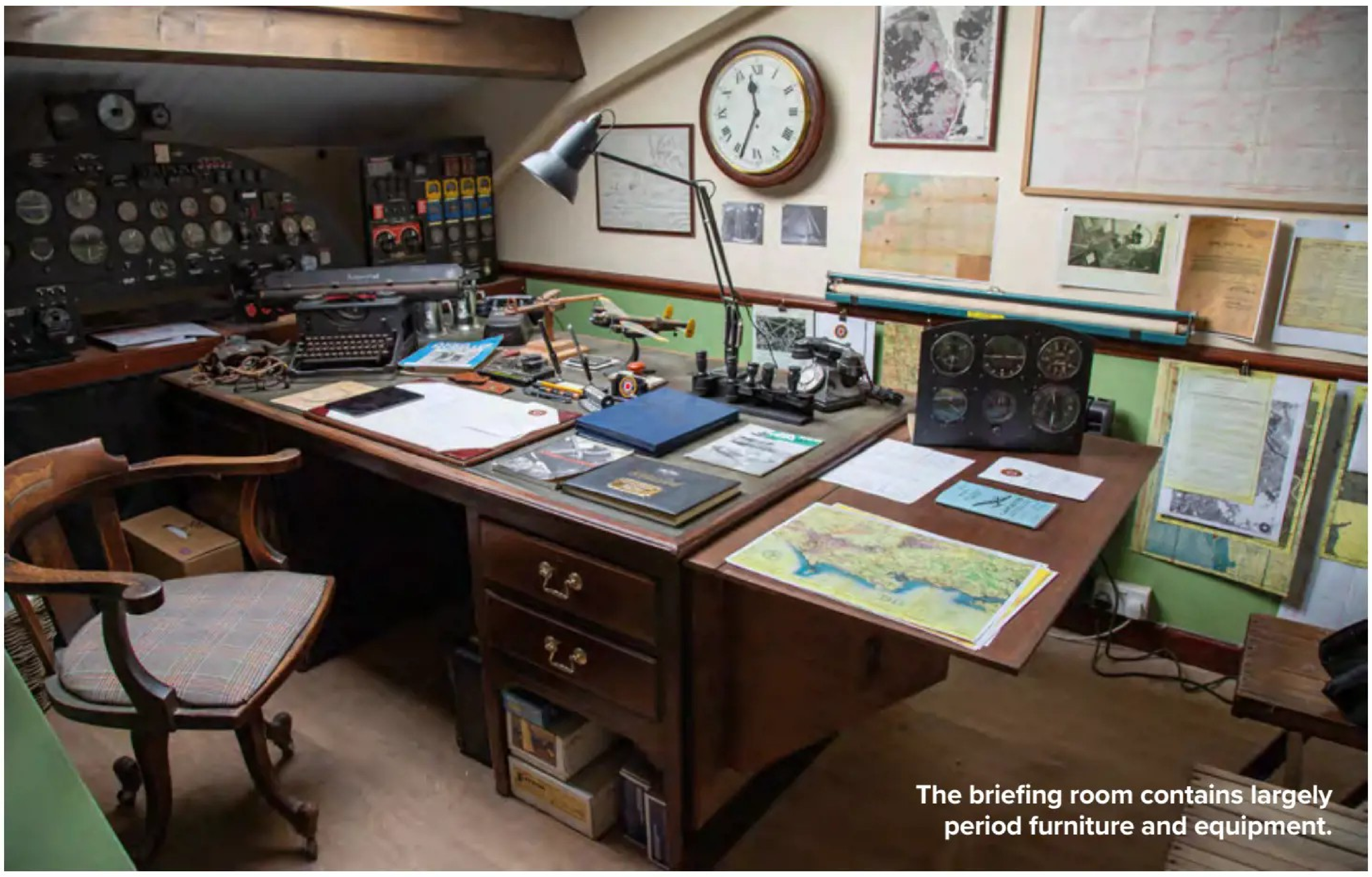
This is worth the wait. Andy has painstakingly built the forward fuselage, from the main spar to the aft pivot of the nose turret, using thousands of original drawings and with reference to surviving Lancasters. Particularly helpful in this regard was the IWM's 'Old Fred' nose section, featuring the only period-authentic Lancaster cockpit in existence. Spending years searching and wheeler-dealing for parts from all over the world, Andy has fitted out his Lancaster with original equipment such as radio and navigation kit, and the all-important flying controls. "The control wheel you're holding has been over Germany", Andy confirms. The seat, throttle box, bomb release lever and many other items around the cockpit are genuine wartime Lancaster items. The canopy is a 1944 factory item. It's tempting to conclude there is more original fabric here than in many modern warbird restorations.

> "The control wheel you're holding has been over Germany"

The instruments are all reproduction, and for good reasons — first, the legal position relating to radium, and second — and more importantly — Andy insisted they all work exactly as per the originals, linked to the software so they behave as if in flight. He teamed up with an engineer to create authentic instruments that functioned properly, a project-within-a-project that required seven years to fulfil. "No-one has ever done this before", he says.

It takes a certain amount of suppleness to reach the pilot's cockpit. The gap through which to move past the radio and navigation positions is narrow and partially obstructed by items of equipment and the aircraft's structure. It gives a disquieting sense of how difficult it must have been to bail out of a stricken Lancaster.

When settled in the pilot's seat — though Andy is happy for anyone to 'fly' in the flight engineer's, navigator's or radio operator's position if they wish — he explains the controls. A



The briefing room contains largely period furniture and equipment.

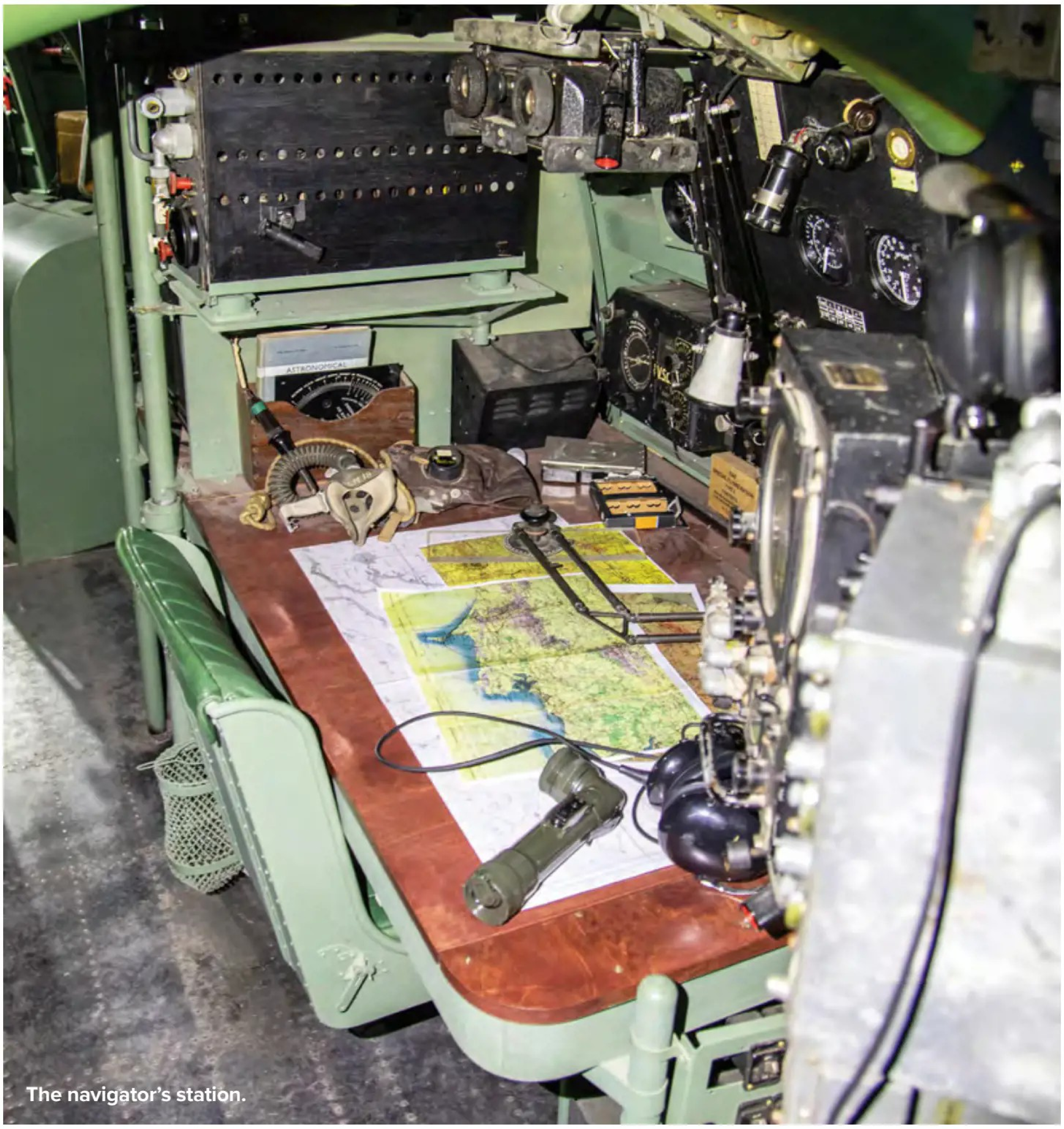
qualified pilot of many years' standing, Andy acts as the 'instructor,' which is invaluable to anyone who hasn't flown a Lancaster before. The 'outside world' is projected onto a wrap-around screen by three linked projectors, using software based on the X-Plane simulator. Once things start moving, it's easy to forget it isn't real.

The dynamics have been simplified slightly, reflecting that most people won't have flown an aircraft before, and even those who have might not be familiar with some of the characteristics of a 1940s' bomber. The Lancaster's tendency to adverse-yaw — turning against the direction of roll if the rudder is not used in conjunction with the ailerons — has been tuned out, for example. The control loads do not reflect the reality of a 30-tonne bomber, but Andy concedes that if they were at realistic levels, most people using the simulator would struggle. Even so, once things start moving, 'flying' the Lancaster feels remarkably authentic.

My flight started from Bournemouth Hurn, with Andy operating the throttles and rudders so I could give full attention to the control yoke. The sortie nearly ends prematurely as it takes me a few seconds to realise just how far I need to heave the column back to pull the Lancaster off the ground. Fortunately we clear the airfield boundary, and in the climb I can begin to get acquainted with the aircraft's responses. Andy lets me have the rudders at this stage, and while crossing the Solent and orbiting the Isle of Wight I feel as though I'm beginning to get the hang of it. I'm allowed a short diversion to Southampton to overfly my house, and by this point it seems so real I find myself wondering for a moment if my dog can hear us. The simulator doesn't move, but such is the immersion from the screen that it feels as though the aircraft is pitching and rolling. I even get a bit of inner-ear 'wobble' while looking out of the side windows during a turn.

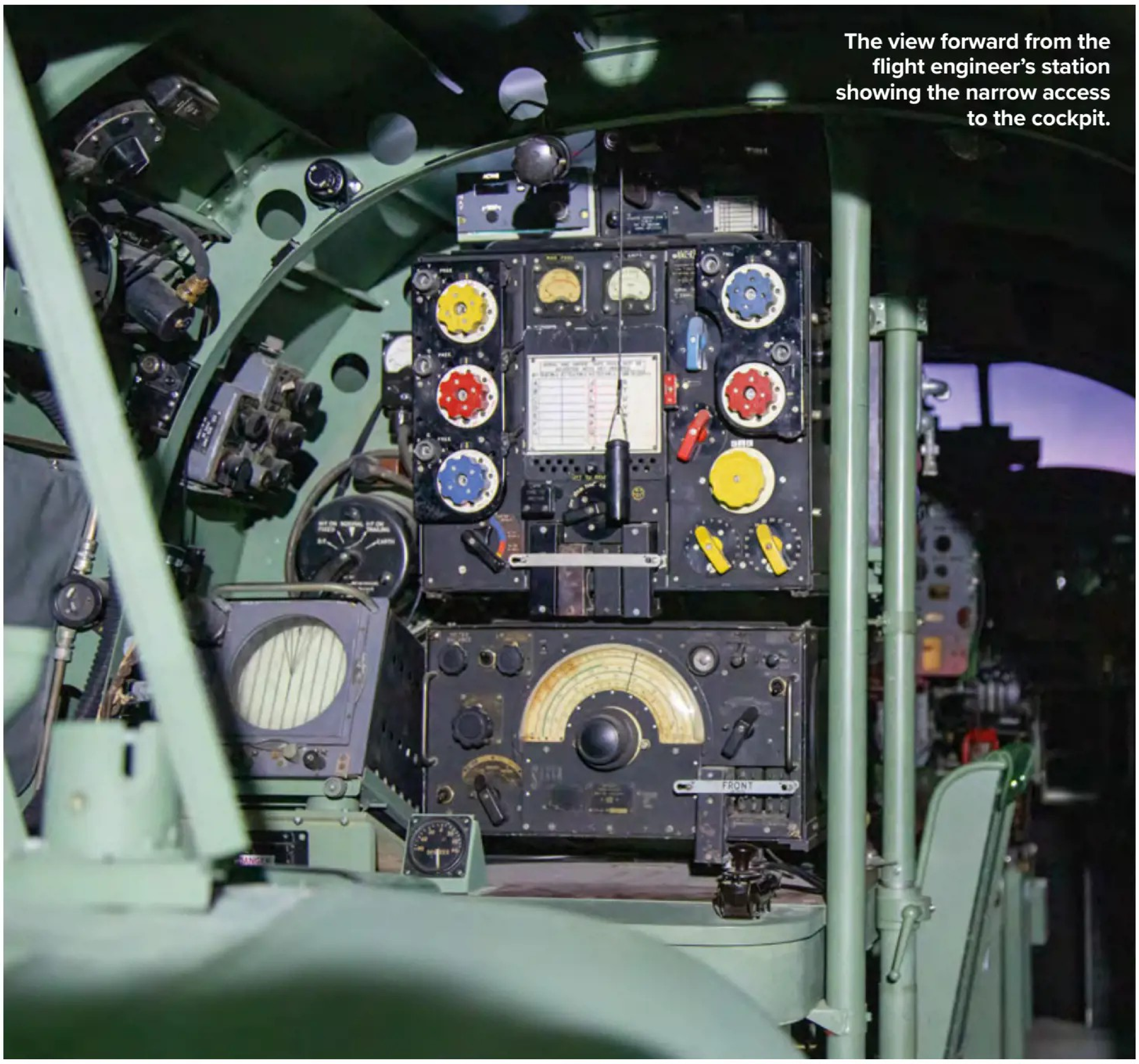
OXYGEN MASK TEST RIG
RAF

Even the entrance corridor is authentic to a Bomber Command station, including this genuine oxygen mask testing rig.



The navigator's station.

The Lancaster feels as though it's not too hard to fly, in the scheme of things, but very hard to fly well. It's almost impossible to keep it entirely straight and level, and bearing in mind the conditions are set for completely still air, it brings home what a challenge an eight-hour flight to Germany and back must have been, in the dark, with wind and turbulence to contend with, not to mention the enemy. Despite the lower control loads, there's a real sense of this being a large and heavy aeroplane, with a convincing lag between control input and response. It would be very easy to end up in a constant cycle of over-correction, chasing the aircraft around the sky. It's more enjoyable than it sounds trying to get it right, and there's a huge sense of satisfaction when you get close to it. You probably won't crash, but it will exercise all your attentions to fly remotely precisely.


The view forward from the flight engineer's station showing the narrow access to the cockpit.

> **“There's a real sense of this being a large and heavy aeroplane”**

And we're about to need a bit of precision, because having flown back up the south coast, we're soon to drop to 'bouncing bomb' level to fly along the 'Upkeep' test run of the Fleet Lagoon inside Chesil Beach. It takes quite a tight turn to swing onto the right course without running into Portland, and there's a definite sensation of speed as we hurtle along the narrow strip of water at around 60ft. It's great fun, and pleasing to fit in part of the flight that has a real connection to the Lancaster's wartime career, even on what is really just an introductory experience.

From there, we head east and back to Hurn cross-country. Andy takes care of the rudders again and it's my job to fly us down to land. I'm amazed I'm able to get onto the runway and not end up a hundred yards to one side or the other, given how the lag between input and response seems to have quadrupled as the ground approaches. I suspect Andy had a fair amount to do with it, but he is complimentary to a fault. We had been 'in the air' for an hour and a quarter — it felt like half that.

After we taxi back to the apron, which gives me the opportunity to try steering by differential throttle, we clamber back through the fuselage and back to the briefing room. Following a flight, you are presented with a reproduction wartime map of your route, stamped with genuine 1940s' rubber stamps, and a 'certificate of qualification as first pilot' and 'summary of flying' based on Guy Gibson's original Form 414. Andy is kind enough to rate me 'above average'. There's also a souvenir mug, with which to taunt the non-Lancaster pilots in your life.

Andy was also keen to show me a short night flight, to demonstrate the conditions in which the majority of Lancaster operations took place. We take off from Scampton at dusk and fly over the sea, watching its empty expanse slowly drain of light. It feels unmooring, and it's possible to imagine how eerie it was as the light went completely, with nothing visible below and only stars above, at the start of a flight lasting many hours. We turn south, navigating traditionally, until hitting the Wash, where I have to judge the point at which to turn back for the aerodrome. We land at what Andy thinks is probably Coningsby. Again, I can't believe I hit the runway, especially without much light. It leaves a lot to think about. Neither of the two flying Lancasters operate at night, so for those who want a nocturnal Lancaster experience, this is it.

Lancaster Flight UK is a labour of love rather than a money-spinning venture, and it shows. The care and attention with which every single element has been assembled is jaw-dropping. For Andy, authenticity is the key. This isn't about providing a buzz to thrill-seekers, but acquainting people with the reality of what Bomber Command aircrews faced during the war. The oldest person to 'fly' in Andy's Lancaster so far was 94, and the oldest to pilot it — bearing in mind that simply getting into the pilot's seat is not physically straightforward — was 88. Attendees so far have included a high proportion of children and grandchildren of Bomber Command veterans who want a way to experience something of what their relatives went through, to connect them with their heritage.

As such, Andy is not interested in inauthentic frivolities like flying through Star Wars Canyon or under the Clifton Suspension Bridge. To test the accuracy of the simulator, and as a memorial, Andy assembled a crew to fly a re-creation of the Dams raid, Operation 'Chastise', on the 80th anniversary in 2023. They included BBMF and former Vulcan navigator Sqn Ldr Andy Marson, who, according to Andy, "got us to the Dutch coast within six seconds of David Maltby's time, and to the dams within a minute". Yes, the Lancaster is operating accurately.

As a mark of the achievement in creating Lancaster Flight UK, Andy was awarded the Wessex Light Aircraft Association's trophy for 'restoration or new-build of the year', an astonishing accolade for something that's not actually an aircraft. There are further projects in the works — he has two more Link trainers to restore, one of which will be finished to work completely authentically, as well as a Piper L-4 'Grasshopper'.

Andy is keen to welcome would-be Lancaster aircrew for flights. I cannot recommend it highly enough.

For more information visit lancasterflightuk.co.uk

GET INVOLVED!

How you can get started with a more active role in historic aviation

COMPILER: BEN DUNNELL

Learn to fly

The Cambridge Flying Group's two Tiger Moths, G-AOEI and G-AHIZ. DARREN HARBAR

Super Cub G-BIMM of the Clacton Aero Club, immaculate after a full restoration. BEN DUNNELL

Go to Old Warden on a fine day, and the chances are you'll see two yellow DH Tiger Moths active. Always a delight, of course, but it's even better to know these examples are still teaching people to fly in the time-honoured way. The Cambridge Flying Group has been performing private pilot's licence training on its Tigers since the 1950s. But what if you're a younger pilot who might struggle to afford the course? Well, there's a potential solution.

It comes courtesy of the Worshipful Company of Coachmakers' and Coach Harness Makers' Flying Scholarship, established in memory of Sir Geoffrey de Havilland. Set up in 2014, the scheme is among several funded by the Coachmakers, a City of London livery company, to help young people make a start on their careers. It trains the successful candidate through to PPL standard on the Cambridge Flying Group Tigers. Worth £7,000, the award covers most of the cost of the standard hours' training required for a PPL; the remainder is funded by the successful candidate on an hours-flown basis. Its primary aim, say the Coachmakers, "is to preserve classic aircraft operation and engineering."

The next round of applications opens on 1 May; it is open to anyone between 18 and 35 years old, resident in the UK, and who has not previously been awarded any such bursary (except the 12-hour Air Cadet scholarship). Those putting themselves forward should have an affinity for vintage and historic aviation, either as an ambition or perhaps already working in a voluntary, full-time or part-time capacity. Prior flying experience is "neither an advantage nor disadvantage; it is enthusiasm, potential and commitment that will count". The closing date is midnight on 15 June, and interviews for shortlisted candidates will take place at Old Warden in August.

Then, for those who already have their PPL, there's the Thomas Castle Aviation Heritage Scholarship, the Sywell-based organisation we cover in full on pages 124-128. Applications for its latest annual scholarship opened on 1 April.

Of course, you can also do taildragger conversions with a variety of other operations around the UK on a regular paid-for basis. Several — as detailed on pages 110-117 — use Tiger Moths in which introductory/experience flights are also available. The Piper Cub is another popular mount for this purpose, for instance with the Clacton Aero Club whose freshly restored Super Cub returned to the skies last year. Its two-day tailwheel course includes five hours of instruction. Farm Strip Flying, based at Croft Farm in Worcestershire, also uses Cubs, as do Cubair at Redhill and White Waltham's West London Aero Club, while Modern Air at Fowlmere employs a Cessna 140 and Fairchild Argus.

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Volunteer

Getting into the old aeroplane world by volunteering, especially for a museum, is an excellent way to immerse yourself in the environment. It needs to be said, though, that today it's not simply a question of turning up with bundles of enthusiasm and being given a job to do — least of all on a big restoration. Many organisations are now looking for skilled people to aid with particular projects or fill volunteer vacancies, and will want to check your ability out first. If it's a member-based organisation, you'll be required to sign up as a member, after which you can volunteer to help if you possess the correct skill sets.

But none of this should sound offputting, because such involvement can be extremely rewarding if you can make the commitment. Some larger museums — such as the RAF Museum — even provide the possibility of volunteering from home, again in connection with specific projects. In all cases, the necessary training can do great things in terms of broadening horizons and developing skills.

So, if there's a museum or similar organisation in your area to which you'd like to offer your time, interest and talents, get in touch with them. The work might be unglamorous, but you never know what that initial approach could bring in the longer run. Most importantly of all, there's the feeling of having made a contribution — of being part of the preservation movement. As the popular saying goes, every little helps.

All sorts of organisations are on the lookout for volunteers, such as the Southend-based Vulcan Restoration Trust, which keeps XL426 live. On the engineering side, it's specifically after those with current or previous aircraft engineering experience, but there are other opportunities relating to such areas as events and admin. KEY/JAMIE EWAN

Buy a Catalina share

BEN DUNNELL

Plane Sailing is seeking new shareholders to join the operation of its Duxford-based PBY-5A Catalina, G-PBYA. It's open to both pilots and non-pilots; if you do fly, there's the opportunity to go through Plane Sailing's full training programme, and thus become type-rated on the PBY — on land to begin with, and later on water. The superb experiences you can enjoy as a result are obvious, with flights all around the UK and well into Europe, including regular water operations.

Two options are offered: full equity and redeemable shares, the latter for those who wish to join for a year. The share input for full equity ordinary shareholders is currently £24,750, returned when the share is sold on to a future shareholder, with monthly fees of £300. There is also an hourly flying rate for shareholders.

www.catalina.org.uk/contact

Join a Chipmunk group

BEN DUNNELL

Group ownership of an historic aeroplane is a very attractive option, and the DHC Chipmunk is understandably popular. A good opportunity that's come up involves WB585/G-AOSY, built for the RAF in 1950 and today hangared and maintained at Audley End, Essex. A 1/10 share is available in the aeroplane, which was given a full restoration to bare metal in 2016 and is described by its owners as "one of the top 'Chippies' in the UK."

The cost is £10,000 per share, which amounts to £110 per month, and £110 per flying hour (wet). Check rides and/or conversion training as required can be provided by group members. To apply, e-mail aosygroup@gmail.com, providing a record of your flying experience and share-ownership history including total hours and licence type, time as P1 on single-piston aircraft and taildraggers, and details of any tailwheel aircraft owned or flown before.

Note: The information in this Historic Aviation 2025 special has been compiled from a variety of sources — where possible, from information provided by the events, operators, museums or organisations themselves. Details may change, so it is advised to check beforehand prior to arranging a visit or booking. *Aeroplane* cannot accept responsibility for any errors.

GET INVOLVED FOCUS

BURNING BRIGHT

The family and friends of Thomas Castle, who lost his life in 2019, are working to ensure his name lives on as a means of inspiring young aviators and promoting vintage aviation. And what better aeroplane to do this with than the Tiger Moth he so loved?

WORDS: JAMIE EWAN

A Tiger Moth on finals to Sywell against the burning orange skies of Northamptonshire at the end of a day's scholarship flying. NIGEL HARRISON

***Tom's Tiger*, the heart and soul of the trust: DH82A Tiger Moth G-ANTE airborne out of Sywell last year.** TCAHS

“Contact!” The word echoes across the hallowed grass of Sywell Aerodrome. Almost instantly, the evening's silence is filled with the sound of three Gipsy Majors, their melody beating the warm summer air into submission. There's a feeling of excitement as the trio of Tiger Moths bursts into life, their props eagerly biting into the air. Soon all three are snaking their way towards the runway, the setting sun turning them golden as they go. In each of the cockpits an instructor and a student go through their checks. It's one of those moments. What's that saying? “Ah… de Havilland!” With a beautiful scarlet and black machine, carrying the registration G-ANTE in silver and the name *Tom's Tiger* in gold on the nose, leading them into the air, a smile appears on my face as the other two chase it down through the skies of Northamptonshire.

Yet that red and black aircraft is more than just a Tiger Moth. For one man it's the legacy of a son taken too soon. For another it was his best friend's aeroplane. For me it was the first type my grandfather flew — the one I can trace my own love of aviation to. But for still more it's giving them their first true taste of vintage aviation.

Before long they appear overhead in a neat vic formation. Next to me, Ian Castle nods approvingly — it's a pretty special way to end a day of scholarship flying under his watchful eye. What he doesn't know about the Tiger isn't worth knowing. However, behind his quiet, friendly demeanour lies the heartbreak of losing his son Thomas. What defines Ian is the strength he gathers from that loss as he paves the way forward to give young people greater, and much-needed, opportunities in vintage aviation post-private pilot's licence.

Tragically, Thomas lost his life in an aerobatic training incident during August 2019. He was just 30 years old. The following year, Ian established the Thomas Castle Aviation Heritage Scholarship. “I wanted to find a way to do something in his memory and to keep his legacy alive”, explains Ian. “The trust came about because Thomas was so enthusiastic about everything aviation — particularly all things vintage. The thought was to form a trust around ‘Tango Echo’, which was effectively his aeroplane, and give people around his age the chance to fly a vintage aircraft”. Half a decade later, it's much more than that.

> ***“Thomas was so enthusiastic about everything aviation”***

Chatting in his Sywell workshop, Ian comments, “I've been involved with vintage aviation for more than 30 years, and the Tiger Moth for just as long. Thomas initially took a keen interest in motorsport, and went on to build, restore and race motorbikes and go-karts. He was never afraid to ask questions, had an insatiable willingness to learn and perfect his craft, and would go to great lengths to research and teach himself. Despite growing up around it here, he came to aviation later than most.”

Working alongside Ian, Thomas soon became a regular fixture at the airfield: “It was one of Thomas's favourite places”, recalls Ian. As Simon Wilson, a friend to both, now an instructor pilot with the trust and one of its greatest driving forces, puts it, “If they weren't together, the

Some of the TCAHS team brief the day's flying. From left, instructor pilots Simon Wilson and Danny Williams, Ian Castle — the man whose vision makes it happen — and Tilly Watts, a 2024 scholarship recipient. NIGEL HARRISON

The ‘Tiger grin’ — George Gibb beams from the cockpit of ‘Tango Echo’ following his first solo in the indomitable de Havilland trainer. TCAHS

Tom's Tiger
B

ABOVE: The *Tom’s Tiger* nose art that adorns flagship G-ANTE. TCAHS

BELOW: It isn’t all about flying. Fostering engineering and aircraft husbandry skills, as well as an understanding and empathy for both airframe and engine, are of equal importance to the continued operation of historic aeroplanes. NIGEL HARRISON

other was close by.”

With Ian rebuilding, re-covering, operating and maintaining numerous Tigers under his Classic Sport Engineering banner, Thomas was given many opportunities to fly when aircraft needed ferrying to and from Sywell. Smiling, Ian says, “He really caught the flying bug. He got his private pilot’s licence in 2017 and learned to fly ‘Tango Echo’ soon after. At that time, the Tiger was owned by a group here that was kind enough to let him to fly it when he wanted… He used to spend huge amounts of time maintaining and cleaning it — pretty much every day he could, he’d be with the Tiger…”

Recognising what the aircraft meant to Thomas, and the sheer amount of work he’d put in to keep it in fine fettle, the group gifted him a small share. This only furthered his knowledge in the type and his investment and involvement in G-ANTE. Ian says, “Before I knew it, he wanted to buy it outright from the owners — which they had agreed to. A few years before Thomas put his restoration skills to work helping me restore ‘Tango Echo’, we re-covered the wings around 2012. Five years later he soloed that very aeroplane.”

Andrew Rawlings, another trust stalwart, remembers that day: “It was one of those difficult solos — everyone knew it was happening but him. We were hiding behind the tower waiting for it to happen. When he landed […] you’ve never seen a happier bloke — he couldn’t contain himself. He was absolutely buzzing. He really did love the Tiger”. Simon Wilson adds, “Any chance to get up in it, he did. His love for the Tiger was huge — I’d never really realised what an incredible, and important, aeroplane it was until Tom showed me. Now, with more than 300 trips in them, it’s up there as one of my favourites.”

> ***“In a Tiger, flying becomes an art, not a science”***

As Andrew put it, “Tom wasn’t just in it for himself. He was always interested and enthusiastic in what everyone else was doing. When I started building a Pitts Special, he was happy to devote time to help, share his knowledge, and point me in the right direction when I needed it.”

It was at Sywell that Thomas struck up a close friendship with the late Richard Grace of Air Leasing/Ultimate Warbird Flights fame. As a result, he went on to work on several of that company’s projects, including the Spitfires, Buchóns, Mustang and Thunderbolt in the Ultimate Warbirds stable. Of Tom, Richard said, “To say that his passion for the Tiger Moth was infectious was an understatement — he lived and breathed everything about it down to the most minute detail. He strived for perfection in every field and achieved everything he set out to due to hard work and the understanding for that which he set out to achieve. He was as much an engineer as he was a pilot, a rare combination, but even more rare to have that level of aptitude in the vintage aviation sector”. Such was his ability, Richard predicted that Thomas would have gone on to fly warbirds like those he regularly worked on.

While I didn’t know Thomas for long — just over a year or so — that passion for the Tiger was something else. I remember one evening sitting in the bar at Sywell after a day’s flying listening to him describe its construction, flying characteristics, and some

TCAHS groundcrew members — from right, twins Scott and Alex Munnouch, and the author — get ready to launch G-ANTE, G-ALIW and G-AMTV for an evening sortie from Sywell. NIGEL HARRISON

of those who had flown the type. When I got home that night I ordered a copy of Alan Bramson's *The Tiger Moth Story*. Little did I know back then I'd get the chance to fly the Tiger. Considering I believed the type out of my reach, this life-defining moment was thanks to TCAHS and its desire to get younger people into vintage aviation.

While Ian and I are talking, the unmistakeable note of a Rolls-Royce Merlin fills the workshop as one of the resident Spitfires slips the surly bonds once more. Surely that's the epitome of historic flying? It's the ultimate dream machine of many a pilot, including me. But like everything, the march of time is having an effect — as the aircraft get older, so do those at the controls. And while there are a few organisations out there trying to provide younger aviators with the chances to become the next generation of vintage pilots, they are few and far between.

Attracting them to this niche community requires overcoming several challenges, including shifts in technology, cultural attitudes, economics and lifestyle preferences, as well as an apparent lack of desire — or chances — to connect with history. And that's before you take into consideration the initial investment, along with maintenance, operational and training costs. But above all is the evidential lack of access and exposure to such opportunities. As Simon notes, "We often talk about where the next generation of warbird pilots is coming from. There's very little out there to get younger people into vintage aviation — most nowadays seem to just want to go down the airlines route, but there's a whole other world of flying out there. The trust allows many those first tentative steps and exposure into that world."

Now in its fifth year, the scholarships are both established and respected across the vintage aviation scene. But it isn't as simple as 'jump in and off you go', as Ian explains: "Each recipient receives five hours of instruction on the Tiger here at Sywell. However, flying is just one aspect of the syllabus. Like Tiger pilots, Tiger engineers are a vanishing breed. Fostering engineering and aircraft husbandry skills, as well as an understanding and empathy for both airframe and engine, are of equal importance to the continued operation of historic aircraft. Tasks such as cleaning and post-flight inspection increase a pilot's understanding of their aircraft and ensures there are no nasty surprises the next time they fly. Knowledge is absorbed by osmosis, not just in a classroom."

This is something Richard Grace agreed on when he said, "Truly immersing oneself in aviation is near a necessity if you wish to succeed within the industry. Unfortunately, it was not until after Thomas's death that I first flew a Tiger and came to realise what a fantastic aircraft it is. It represents a truly fantastic route into vintage aviation. The aircraft is rewarding to fly in so much as to get the most out of it you must understand its every idiosyncrasy and how every element of it works."

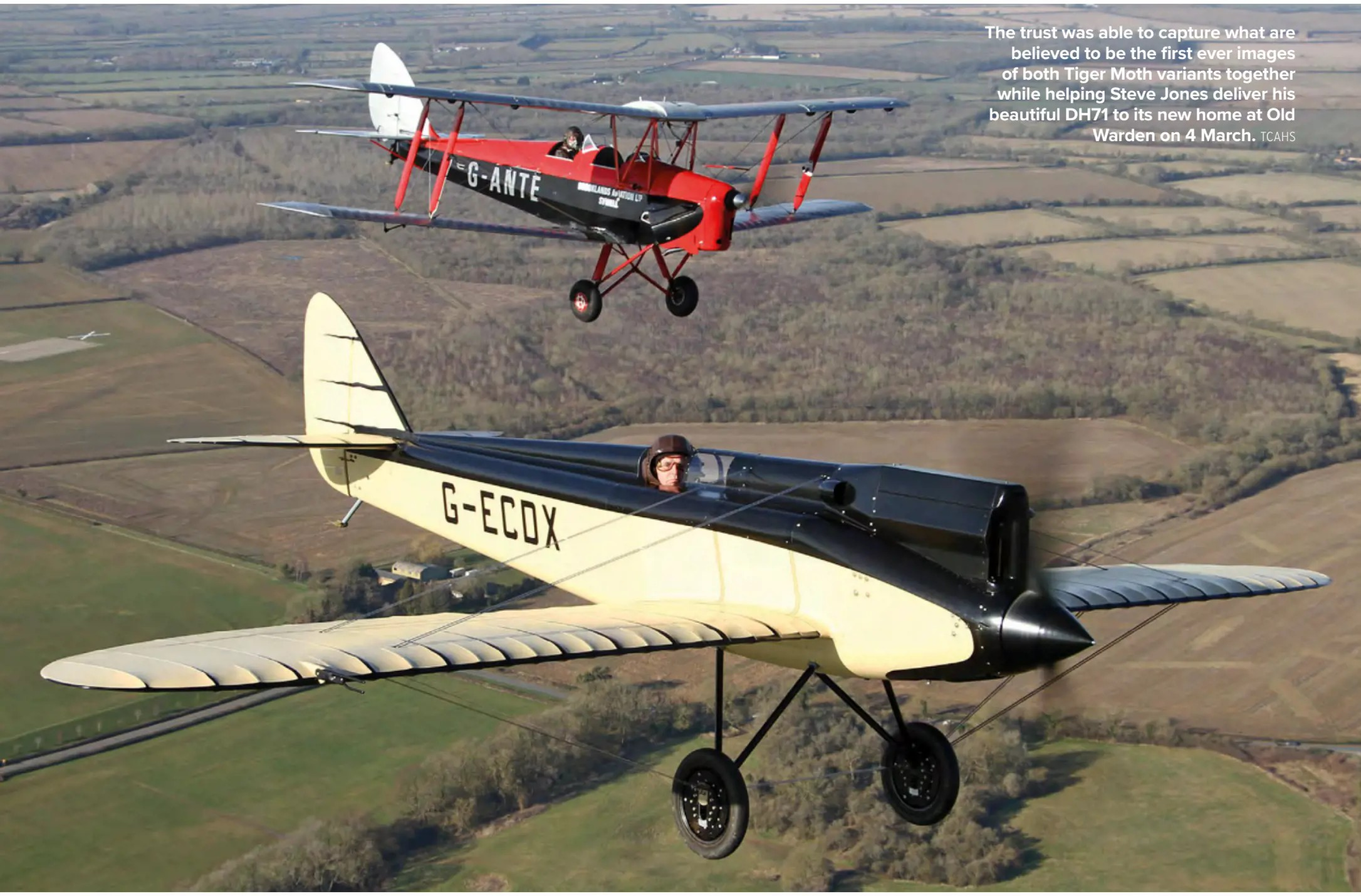
As a TCAHS volunteer for several years now, I've been lucky to fly the Tiger. When you're up there in it, the open cockpit gives you an exhilarating sense of freedom. It makes the sky feel closer, the wind feels louder over the hum of the engine, and every turn feels like a step back in time. In fact, it's a culture shock, especially in an era of automation — but it fits the purpose it was designed for. There's a pure connection between pilot and aeroplane. There's no starter, no stall-warner, no flaps, no canopy, no brakes. In a Tiger, flying becomes an art, not a science. It requires a hands-on, immersive approach. The minute you stop doing everything you need to fly the aeroplane, it lets you know about it. As the adage goes, it's easy to fly, but hard to fly well. Scholarship recipient Michael Tolley sums it up nicely: "To me, the Tiger is the aeroplane equivalent of a tall ship adventure — canvas on sail, the wind in your face and just enough wood and metal to hold everything together."

To date, nearly a dozen scholars have soloed the Tiger thanks to the TCAHS. "It's amazing being able to introduce someone to 'proper flying'", comments Simon. "Taking them up for their first flight in a Tiger and seeing the huge grin on their face when we're back on the ground is something else". One of those who soloed is George Gibb, a 2024 TCAHS recipient. He said, "It's such an incredible aeroplane to have the honour to fly — it takes you right back to the basics". Another is James Shenton: "The trust is not only an organisation that makes your dreams come true, but one where you make friends for life. It's full of dedicated and friendly people who go out of their way to support and help you with your journey. We need more things like this, as it's inspiring younger people into vintage aviation and keeping these incredible aeroplanes alive."

> ***"We want people to be involved with the aeroplane"***

But, as Ian says, it's not a scholarship for people who want to come along, do a few hours and move on. "We're looking for people who want to take this sport or this industry forward like Thomas wanted to. It's vitally important to foster that enthusiasm in people and encourage them to look after these aeroplanes, as well as behind the scenes at the operation, [focusing on the] constraints and safety needed to keep them flying. We're keen to find people who want to get involved with the aeroplane as opposed to just flying it. Everyone joins in across the organisation". Personally, I have been taught how to 'prop-swing' — a skill I can help pass on.

At presents some 15 scholars are still actively involved across the trust's activities, both



The trust was able to capture what are believed to be the first ever images of both Tiger Moth variants together while helping Steve Jones deliver his beautiful DH71 to its new home at Old Warden on 4 March. TCAHS

in the air and on the ground, including Brad Simpson. "This is much more than flying", he reflects. "As scholars we are encouraged to continue our association behind the scenes with the trust, allowing us to understand and develop the skills needed to not only fly the aircraft, [but to] operate and maintain them too. It really is a fantastic way for young people to get involved in vintage aviation."

It's a sentiment Tilly Watts, a 2024 scholar, shares: "I had such an amazing time last summer getting my first taste of vintage flying, all thanks to the trust. Now part of the team, it's been a great foundation for my future in vintage aviation". Shortly after completing his scholarship, Michael Tolley said, "For someone whose PPL training was on 'training-wheel' aeroplanes, the opportunity to get stuck in with these old girls was simply amazing. The scholarship is defined by the overwhelming positivity, support and camaraderie among the team — I felt that I was in just the right place to grow my experience as an aviator. Marvellous aeroplanes, great people and a fantastic time."

Over the years, numerous airshow and warbird pilots have been involved with the trust. Ian says, "They recognise what it is we are trying to do. The transfer of knowledge is key to this". Further testament to the respect for both Ian and Thomas — and Ian's decision to place 'Tango Echo' in trust to provide these opportunities — is the number of former customers and organisations that give their support. Among them are Little Gransden-based Vintage Engine Technology, better known as Vintech, the Light Aircraft Association, de Havilland Support, Vintage Fabrics at Audley End, Henstridge's Aircraft Coverings and Sharman Avionics, as well as the de Havilland Educational Trust.

Ian explains that the latter, "provides both support and funding for the scholarships as well as the use of its Tiger Moth, G-TIGA. Their goals are the same as ours — getting younger people involved in vintage aviation to develop their flying and engineering skills. It all goes towards preserving our aviation heritage. As a result, the aircraft is operated by the trust and kept at Sywell."

◆

The enthusiasm and support for the trust from the Sywell community itself goes beyond its primary objectives, with the night shoots it runs there. The most recent, in October 2024, welcomed the nocturnal public debuts of Fighter Aviation Engineering's P-47D *Nellie B* in the hands of engineer Steve Kingman and Steve Jones's delightful DH71 Tiger Moth racer reproduction. "As a result of the latter relationship", adds Ian, "the trust was able to capture what we believe are the first ever images of both Tiger Moth variants together — at least in UK skies — while helping Steve deliver the aeroplane to its new home at Old Warden."

Ian concludes, "I find what we are doing very emotional, but in the same breath hugely rewarding — to see *Tom's Tiger* in such a way that honours him, doing what he would have wanted to do within the vintage aviation community. It's a lot of what keeps me going. To lose your business partner, your best mate and your son all in one fell swoop is tough, but if we can give something back to vintage aviation, then Thomas's memory won't be forgotten..."

To find out more about the Thomas Castle Aviation Heritage Trust, its scholarships — open from 1-30 April — or to book a Tiger Moth flight experience, the proceeds of which go to the trust, visit www.tcah.co.uk

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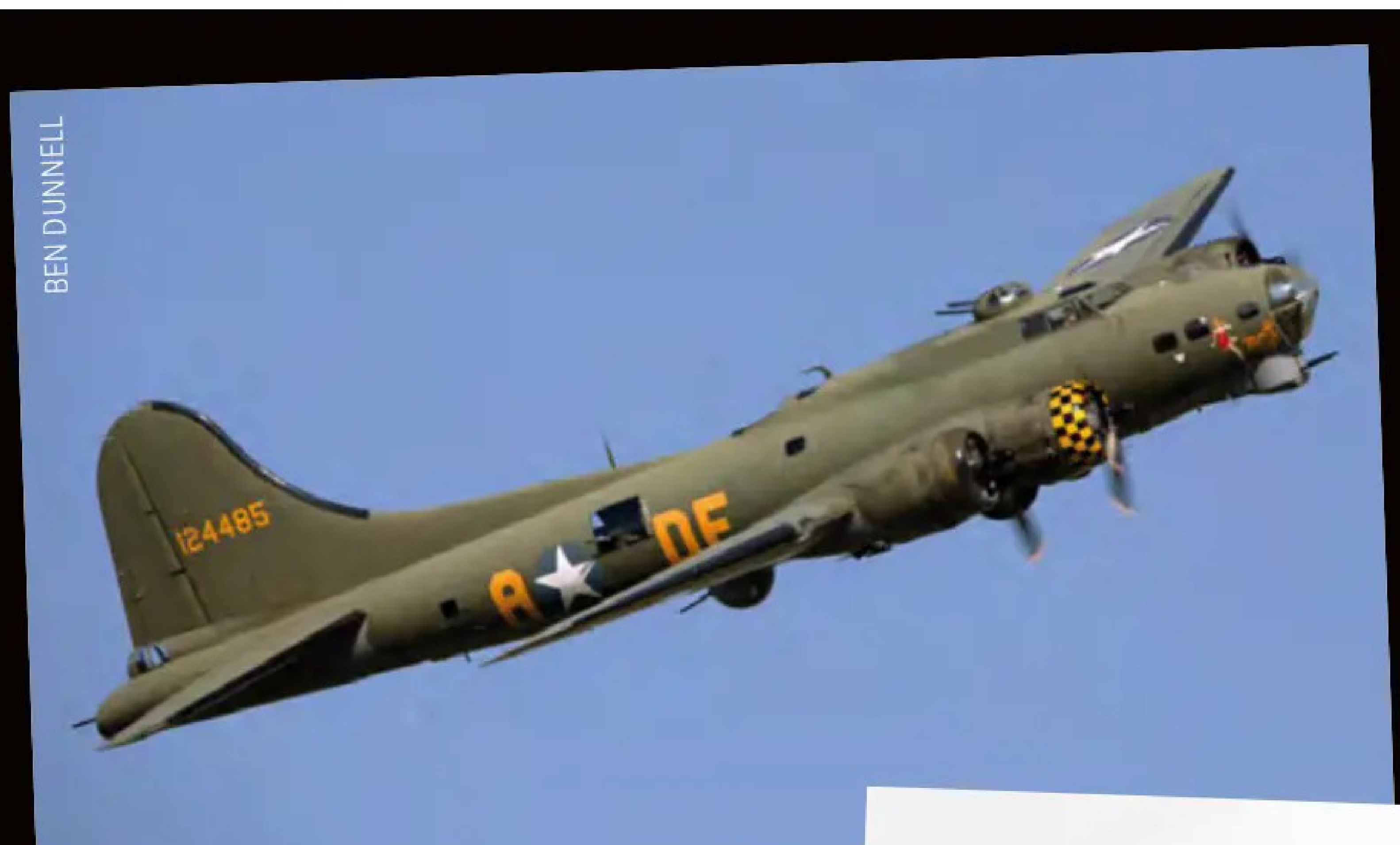
VIA LANCE BYRNE


BEN DUNNELL

SALLY B'S HALF-CENTURY

Fifty years on the display circuit for the beloved B-17

VIA PETE LONDON

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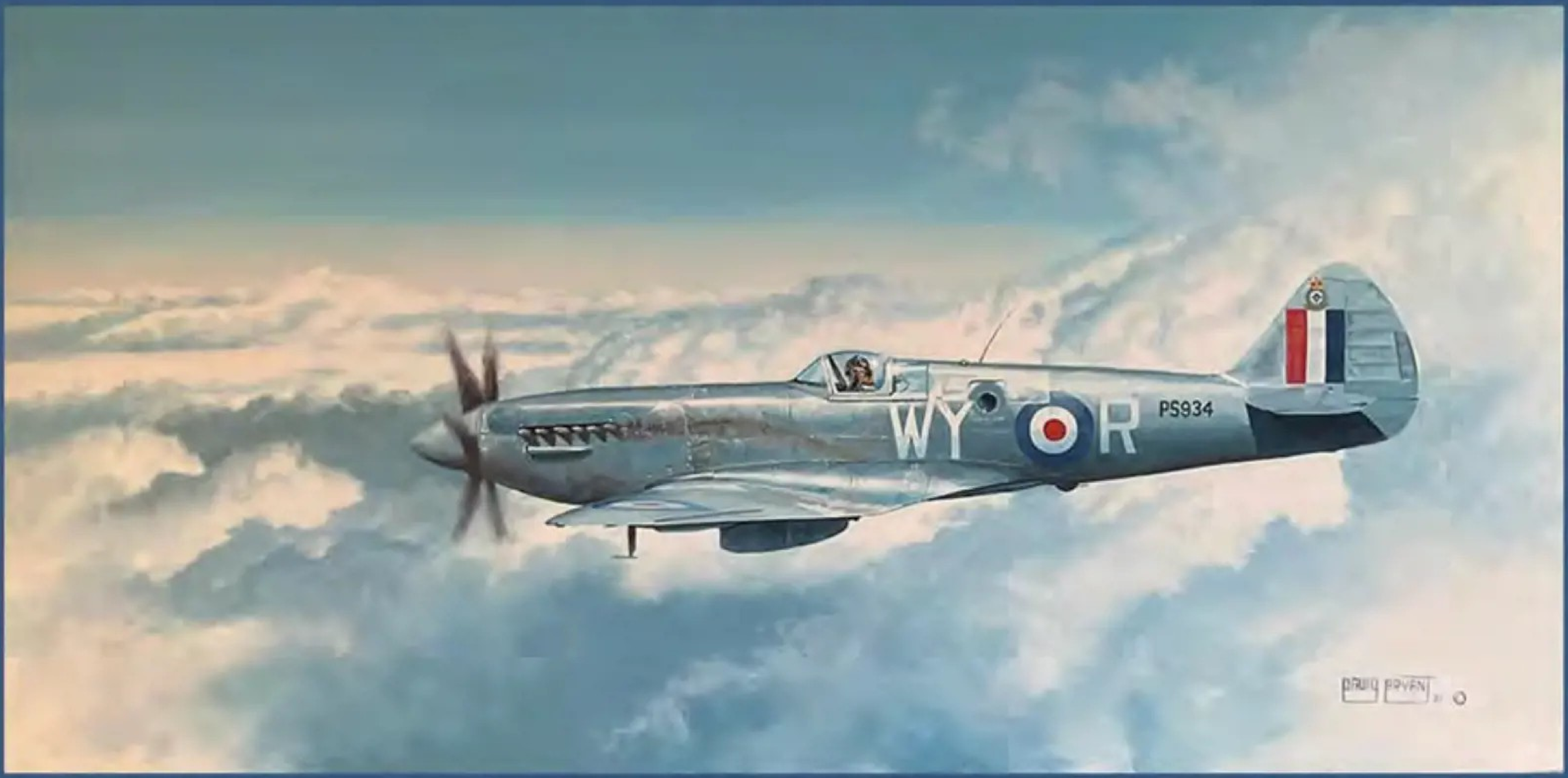

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